RISK SOCIETY ON THE LAST FRONTIER:

INDIGENOUS KNOWLEDGE AND THE POLITICS OF RISK IN OIL RESOURCE MANAGEMENT AT ALASKA'S NORTH SLOPE

By

Berill Blair

RECOMMENDED: James N. Gladden

Pia M. Kohler

Advisory Committee Chair

Mary F. Ehrlander

Co-Director, Northern Studies Program

APPROVED: Tim Hogan

Dean, College of Liberal Arts

Lawrence K Duffy

Dean of the Graduate School

April 8, 2010

Date

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A THESIS

Presented to the Faculty

of the University of Alaska Fairbanks

in Partial Fulfillment of the Requirements

for the Degree of

MASTER OF ARTS

By

Berill Blair, B.S.

Fairbanks, Alaska

May 2010

Abstract

This thesis assesses the role of modern environmental risks and their institutionalized management in the subpolitics of North Slope stakeholder groups. It draws primarily on the concepts developed by Ulrich Beck and the literature that has grown out of his Risk Society thesis. The purpose of this research is to determine whether the current designs for knowledge production and management inside Alaska's oil management regime are inclusive of the indigenous knowledge (IK) of North Slope residents during the mediation of environmental risks, and whether the extent of inclusion is in proportion with the risk exposures of these communities. The premise of the thesis is that Alaska's oil politics is influenced by risk society conditions, and inclusion of North Slope residents' IK in environmental risk mediation has failed to match the scope of risks imposed upon local communities by negative externalities of oil development policies. Consequently, this trend has resulted in a technocratic hegemony of administrative agencies over risk definitions and disputes over the legitimacy of expert risk-decisions. The thesis is supported by an extensive literature on the politics of science and risk, an examination of the public process at state agencies, and a qualitative analysis of knowledge management initiatives both at the state and at the subpolitical level. The findings of this study support the idea that a new knowledge management model for risk mediation is needed to effectively include indigenous stakeholders' cultural rationalities on the acceptability of risks.

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Acknowledgments

First and foremost I want to thank Dr. Amy L. Lovecraft (Associate Professor of Political Science, UAF) for being the strong and supportive mentor she has been to me. She is a tremendous resource full of brilliant ideas and great advice. I've received substantial inspiration and support from her throughout the years, and working with her has been a great learning experience. I owe her for believing in my abilities, and for always providing encouragement.

I owe my thanks to Dr. James N. Gladden (Professor of Political Science, UAF) for his kind supervision and for having always been generous with this time and patience. He has offered invaluable insights on proper methodology, and always asked the kinds of questions that made me want to work harder.

I also want to express my gratitude to Dr. Pia Kohler (Assistant Professor of Political Science, UAF) for helping me with the tone and focus of the writing, and for her practical advice about staying on task. I am grateful for her contributions.

I wish to gratefully acknowledge North by 2020, an International Polar Year Forum, for providing me with the research assistantship that has served as an inspiration for this work.

I also wish to express my gratitude to my parents, who are no longer with us but are forever remembered.

Last but not least, the work I've done has benefited immensely from one of my greatest assets: my husband Jason Blair, to whom I am forever grateful for his love and kind support. I also want to express my love and thanks to our children Rayne, Daniel, Erik and Ella for inspiring and amazing me every day.

Chapter 1
Introduction

1.1 Background and objectives

"Villages resist oil, gas development in Yukon Flats," "Oil companies expect battle over polar bear listing," and "U.S. appeals court cancels Alaska offshore drilling program," read some of the headlines from the Fairbanks, Alaska newspaper where oil resource-related issues regularly make the front page.[1] The subject of oil development involves a large number of stakeholders, stirs debate – and at times, controversy - over such diverse topics as energy need, sustainability, economic gain, environmental risks, scientific uncertainty, and human rights. There are many stakeholder groups with a vested interest in the politics of Alaska's oil. Depending on the issues these may include federal, state and local officials, national and state publics, pressure groups from Non-Governmental Organizations (both domestic and international), multinational corporations, industry representatives, lease-holders, locals directly residing at or near drill sites, and many Alaskan businesses. The democratic avenues of natural resource management at times become the frontlines when competing interests, and competing knowledge bases assert themselves through public input. Stakeholders often find themselves at an impasse due to diverging opinions on economic, environmental, social and cultural costs of gain of natural resource development.

Oil development in Alaska is administered through a multi-tiered management process, which includes federal oversight where applicable, state-federal cooperative arrangements, state governance, and local (borough, city) involvement. The Alaska Department of Natural Resources (DNR) is the primary agency charged with

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[1] Tom Kizzia, "Villages resist oil, gas development in Yukon Flats," *Fairbanks (Alaska) Daily News-Miner,* 21 July 2008 [newspaper on-line]; available from http://www.newsminer.com/news/2008/jul/21/villages-resist-oil-development-yukon-flats/; Internet; Retrieved on May 9, 2009; Steve Quinn, "Oil companies expect battle over polar bear listing," *Fairbanks (Alaska) Daily News-Miner,* 15 May 2008 [newspaper on-line]; available from http://www.newsminer.com/news/2008/may/15/oil-companies-expect-battle-over-polar-bear-listin/; Internet; Retrieved on May 9, 2009; and Nedra Pickler, "U.S. appeals court cancels Alaska offshore drilling," *Fairbanks (Alaska) Daily News-Miner,* 17 April 2009 [newspaper on-line]; available from http://www.newsminer.com/news/2009/ apr/17/us-appeals-court-cancels-offshore-drilling-program/; Internet; Retrieved on May 9, 2009.

administering oil and gas exploration and development at the state level. The DNR's mission is to "Develop, conserve, and maximize the use of Alaska's natural resources consistent with the public interest."[2] The process of determining public interest can be an adversarial, highly competitive procedure. Resource management issues regularly invoke both subjective and objective reasoning processes, as priority setting entails as much value judgment as scientific facts. The public dialogue may be, at times dominated by seemingly conflicting absolutes, such as economic versus environmental imperatives. The validity and availability of sound scientific facts may be questioned, when regulators receive information with elements of scientific uncertainty. During this process multiple sources and forms of knowledge systems may emerge as stakeholders lobby for recognition by Alaska's natural resource management regime. Often times subjective and scientific opinions have to be merged within the politics of oil development and risk management, and decisions have to be made. But who makes decisions, and based on what findings? Whose science matters in the end? What is the relationship between citizens, decision-makers and science when it comes to risk management and the politics of oil in Alaska?

The focus of this thesis is the use of science during the management of environmental risks associated with oil production in Alaska's North Slope region. As the rapid changes resulting from global climate change make Arctic ecosystems especially vulnerable,[3] the dialogue surrounding the management of Alaska's oil resources increasingly involves the notions of risk, and uncertainty. Definitions for, measurements of, and perceptions of risk diverge among stakeholder groups. Diverging rationalities on environmental risk can be the result of unequal risk exposures. For example, residents living in close proximity to risk sources who would be afflicted the most should harmful consequences of risk-based decisions materialize, are likely to hold vastly different views on the acceptability of risks from those less affected. However,

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[2]Alaska DNR, Division of Oil and Gas, "Division Programs," available from http://www.dog.dnr.state.ak.us/oil/programs/programs.htm; Internet; retrieved on October 12, 2009.

[3] Arctic Council, *Impacts of a Warming Arctic.* Arctic Climate Impact Assessment Synthesis Report. Available from http://www.acia.uaf.edu/pages/overview.html , Retrieved on March 17, 2010.

even identical exposures to risk may result in conflicting risk rationalities. Individuals may respond differently to similar risks and equal risk proportions, because attitudes towards risk are also shaped by economic, cultural and political factors. It is important to establish avenues for input from all stakeholder groups when it comes to resource development, and carefully consider input from those who live near development sites, and hold specialized knowledge of the local ecosystem. Doing so diversifies the scientific and cultural knowledge base upon which policy decisions are founded, and it creates a holistic, flexible risk management strategy needed to deal with uncertainty. In turn, such collaborative resource management and risk mediation practices may build understanding among stakeholders, and increase the perceived legitimacy of policy decisions.

However, the extent to which diverse knowledge systems are, or should be, incorporated to inform officials on environmental risks is an often-contested policy issue in Alaska. This thesis examines existing attitudes and trends in Alaskan politics towards the use of science in risk management during oil development, with a special focus on Alaska's North Slope Borough area, and the diverse knowledge forms entwined in the politics of local issues. Resource management decisions are often complicated by an element of uncertainty surrounding either the scientific information available (e.g. modeling error), or some natural component of a system (e.g. biological diversity).[4] U.S. regulatory agencies have increasingly recognized the value of new kinds of information, and experimental approaches to gathering information beyond purely technocratic means.

Technocracy is a term used to describe a form of scientific governance that is 'hard science' driven, - experts with specialized knowledge are delegated the power to calculate unambiguous answers for us under the guise of social neutrality.[5] Public skepticism however has led social theorists and citizens groups alike to challenge the technocratic elite, and the decision-making processes of technocracy. New discourses for

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[4] North Slope Science Initiative, *Science Strategy.* Available from: http://www.northslope.org/ ; Internet; retrieved on February 18, 2010, 22.

[5] Jack DeSario and Stuart Langton, Citizen Participation and Technocracy. In *Citizen Participation in Public Decision Making,* ed. Jack DeSario and Stuart Langton. 1-17. (New York: Greenwood Press, 1987), 7.

knowledge production have emerged in policy initiatives, creating novel incentives to redefine the flow of information between policy makers and citizens. To what extent has this trend been successful in the resource management processes for North Slope oil?

Consequently this thesis researches whether inclusion of stakeholder input in oil resource management decisions is proportionate with the risk distributions imposed upon North Slope residents by policy outcomes. The goal of this study is to investigate the relationships between inclusion of stakeholder input, the scope of risks faced by stakeholders, and regulators' ability to build consensus for environmental risk decisions. When political decisions include risk-based decisions, which disproportionately affect some stakeholder groups, is there meaningful, balanced inclusion of risk-affected stakeholder groups in risk management processes? Are citizens pushing for increased influence over official risk determinations? In order to answer these questions, this research relies on Ulrich Beck's risk society (RS) thesis. Beck's thesis is vital to this research because it assesses the role of environmental risks and their institutionalized management in the shifting political powers of stakeholder groups. The RS thesis is an especially useful tool for gaining an increased understanding of stakeholders' diverging rationalities on risk and knowledge. The existence of an Alaskan RS bears huge significance to the core questions and theories of this thesis. If RS conditions are present in Alaska's oil resource management, this means that a socially explosive trend develops according to Beck. In a RS the calculability of risks is undermined by scientific uncertainties, while public risk awareness grows and the need for risk regulation becomes increasingly crucial. Since the notion of risk often invokes the question of responsibility and a call for justice, stakeholders' interactions can be greatly influenced by their knowledge of, and perceptions about environmental risks. To what extent may average citizens contribute to official risk determinations within Alaska's oil politics?

Through such an analysis of the politics of risk and knowledge, this research reveals the mechanisms by which non-expert citizenry may spur political movements through knowledge production, and attempt to change the flow of information among citizens and policymakers. More specifically, this research focuses on the inclusion of

North Slope Borough's Alaska Native residents, and their indigenous knowledge (IK) in state and federal level risk management processes. This thesis proposes that, inclusion of North Slope residents' IK in environmental risk mediation has failed to match the scope of risks imposed upon local communities by negative externalities of oil development policies. Furthermore, this trend has resulted in a technocratic hegemony of administrative agencies and creates disputes over the legitimacy of expert risk-decisions. The goal of this research is to introduce new strategies for effective pooling of diverse knowledge forms. The set of recommendations proposed in this research bring together ideas for a new institutional design, one that hopefully increases consensus among stakeholders regarding risks and resource priorities. To support this endeavor the methodology employed within draws directly from Beck's risk society literature.

1.2 Theories and methodology

What is science and how is it used? If science can inform the lives of ordinary citizens, can citizens effectively inform scientific issues? In theory, science is an objective realm and should operate outside of any interference or control from competing private or public interests. Yet science and experts cannot be autonomous of politics in a democratic society. Just as the ordinary citizen may pass judgment on specialized, scientific topics during the political process, so does science influence our political lives, and invisibly, on a collective basis, our entire social order. The borders of science and politics are often blurred. Political agendas may benefit from (or suffer because of) science, as science may either justify or refute the validity of policy issues. In return, successful political agendas may boost some scientific projects, while hindering others by allocating funding based on political, as opposed to purely scientific, considerations. This close, symbiotic relationship between science and politics is at the center of Beck's RS thesis. Beck's work was chosen because of its focus on the politics of knowledge, specifically, the socially revolutionizing nature of modern risks and their environmental impacts, which evolve as a result of policies rooted in scientific and technical knowledge. My research project investigates the interactions between science, environmental risks,

citizens and the institutions of Alaska's oil management, and Beck's work provides the framework to accomplish this task. In order to establish the linkages between Beck's thesis and this research, it is necessary to discuss what *science* and *knowledge systems* mean in the context of my research. This thesis uses the terms *science* and *knowledge, or knowledge systems* interchangeably, and they may indicate a number of different bodies of knowledge. The differences among knowledge systems may be a factor of the identity or the locale (geographic, or political) of the knowledge bearer, but may also be influenced by cultural, temporal and spatial relationships between the knowledge holder and the subject of the known. Resource management schemes in developed countries use the western science tradition as the prominent language of regulation and rationale behind policy decisions. In the context of this research, the terms "scientific knowledge", or science are used to refer to a body of knowledge that is normally *assumed* to be an objective realm, rooted in facts and hard data but insulated from social or cultural influences. Within the boundaries of science, the divide between scientist and citizen is clear, and the dominant flow of information runs from experts to laypersons. Alternate knowledge systems have been gaining attention in resource management however, as science has been forced to "accept its own cultural boundaries that obscure and patronize the intellectual and moral substance of other ways of knowing."[6]

> Skepticism about the separability of science from society, its values and politics, began appearing in philosophy of science more than four decades ago. W.V.O. Quine (1960) proposed that scientific and everyday beliefs were linked in networks. How scientists theorized nature's order and chose to revise their hypotheses when faced with counterevidence depended in part on the ontologies, logics, and epistemologies they brought to their work, largely unconsciously, from their particular cultural contexts. Thomas Kuhn (1970) produced influential arguments claiming

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[6] Melissa Leach et al., *Science and Citizens: Globalisation and the Challenge of Engagement.* (New Delhi: Orient Longman, 2007), 7.

> that (...) particular moments in the history of modern (western) science had an "integrity" with their historic eras[7]

As philosophers of modern science began to question its universality, certainty and neutrality, the science of ecology emerged as one of several disciplines in need of reform. The infrastructures of a highly technological modern world seem to make it increasingly difficult for many people to relate to the environment, and this trend prompted the question of whether there is a need to find a new way to relate to nature not found in scientific ecology.

> The science of ecology, or at least one school of ecology that takes a broader holistic view, provides a new vision of the earth as a system of interconnected relationships (...) people concerned with environmental ethics have searched for the personal and spiritual element of ecology that has been missing in scientific ecology (...) these efforts are very much a part of the broader context of the interest in traditional ecological knowledge, since it represents experience acquired over thousands of years of direct human contact with the environment.[8]

Traditional ecological knowledge (TEK) is just one of several alternate forms of knowledge. TEK may be defined as: "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment."[9] Depending on the locale and identity of the participants, knowledge systems can have many dimensions and definitions. Local knowledge (LK) is a term frequently used by scholars to describe a specialized set of knowledge relevant to the specific locale of the knowledge bearer. LK does not however convey the ecological, cultural and temporal aspect of the concept, and refers to recent knowledge.[10] TEK may be viewed as a subset of LK.

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[7] Robert Figueroa, and Sandra Harding. *Science and Other Cultures.* (New York: Routledge, 2003), 2.
[8] Fikret Berkes, *Sacred Ecology: Traditional Ecological Knowledge and Resource Management.* (Philadelphia: Taylor and Francis, 1999), 4.
[9] Ibid., 8.
[10] Ibid.

Subtle differences between terminologies can at times simply be a factor of preference; for example some scholars favor using the term indigenous ecological knowledge (IEK) over TEK, because the term "traditional" may imply something of the past, something static.[11] The study of knowledge systems is a well-documented, complex field and authors often write their own working definitions to describe TEK, IEK, or LK in the specific context in which they conduct their research. There are no universally accepted definitions for each knowledge system. This thesis focuses mainly on the intersections of western science and indigenous knowledge (IK), however in this the study some policy statements may explicitly reference TEK. *Chapter 2* provides a brief introduction into the politics of knowledge, and descriptions of science, IK, TEK and related terminology in the specific context of this research.

Another important concept to this thesis is the concept of risk as set forth in RS theory. Beck's thesis examines the changing structure of risk, and posits that we live in a new social order in which knowledge production and politics have been revolutionized due to the hazards of modern risks. Beck argues that modern risks are very different from natural hazards, as they are potentially more catastrophic (e.g. nuclear warfare), yet not restricted temporally and spatially as natural hazards (e.g. earthquakes) are.[12] Beck describes a society where risks become a socially organizing and reforming force. Unlike natural hazards, the risks of a RS are socially produced, decision-contingent, and manufactured risks, generated by the processes of modernization.[13] These risks are highly technical (e.g. particulate air pollution), often invisible (e.g. radioactive contamination) and pose unpredictable environmental hazards. According to Beck, the magnitude of risks, and the inability of protective institutions to control these new risks are responsible for the ongoing crisis of modernity.

Beck points out that the risks of modernity escape the control of post-modern industrial societies, to the point that the very *pillars of risk* begin to change. The changing pillars of risk are crucial elements in RS, as these pillars are a reference to the

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[11] Berkes, 5.
[12] Gabe Mythen, *A Critical Introduction to the Risk Society.* (London: Pluto Press, 2004), 19.
[13] Ibid., 16

basis for industrial society's risk calculus, which are transformed in RS.[14] The first pillar, compensation, is impossible, due to the catastrophic nature of manufactured risk. The second pillar, restriction, is also crumbling, because modern risks elude the protective grasp of risk management institutions. The third pillar, the practice of safety and classification, is also impossible because modern risks transcend temporal and spatial limitations. During the 20th century, the massive expansion of public institutions designed to generate scientific knowledge increasingly left risk calculation and management to experts. Beck argues that the institutions in charge of risk regulation have since been paralyzed due to the widespread production of risks (e.g. pollution), as well as the scientific uncertainties, which surround the extent and meaning of risks. However, science is rarely neutral or objective, since during the course of their work, scientists must make assumptions, draw inferences, interpret data, and extrapolate relationships. Even regulatory agencies may at times be guided by assumptions, as much as facts, especially in cases where scientific certainty simply does not exist. Given that regulatory agencies such as the Environmental Protection Agency (EPA), and Alaska's DNR have to conform to policy directives, their scientific practices may have certain arbitrary elements, exposing risk regulation to political and moral bias. The sometimes-arbitrary nature of risk determinations, and the ambiguities of certain scientific issues reinforce the argument for the co-production of policy-relevant information. Through the inclusion of citizens, and alternate knowledge forms in policy making, risk management may gain greater legitimacy and avoid the appearance of being biased. Multiple viewpoints about the same question can result in findings that lower the risk of environmental damage resulting from oil development: For example local citizens are closest in physical proximity to risks produced by modernization such as oil development, and therefore tend to interpret risks differently from risk producers. As a consequence, local people, who bear locally-produced (i.e. highly pertinent) knowledge can become important experts in judging hazards. Co-production of knowledge is an acknowledgement of the social dependence of knowledge, of the fact that science is not a

[14] Scott Lash and John Urry. *Economies of Sign and Space.* (London: Sage Publications, 1994), 34.

neutral reflection of reality. Science and technology is embedded in social practices, identities, norms, conventions and institutions.[15] "Co-production can therefore be seen as a critique of the realist ideology that persistently separates the domains of nature, facts, objectivity, reason and policy from those of culture, values, subjectivity, emotion and politics."[16]

Co-production may be achieved when an active citizenry mobilizes to challenge expert institutions from below through what Beck calls *subpolitics.* Subpolitics is a form of direct politics outside and beyond the representative institutions of the political systems of nation states.[17] Subpolitics changes politics by changing the rules and boundaries of governing processes, so that they become more susceptible to new linkages, and to being negotiated and reshaped.[18] For knowledge production, subpolitics means that citizen-initiated knowledge production influences research, which in turn is designed by, and oriented towards the public's questions and concerns.

> So long as risks are not recognized scientifically, *they do not exist* –at least not legally, medically, technologically, or socially, and they are thus not prevented, treated, or compensated for. No amount of collective moaning can change this, only science. Scientific judgment's monopoly on truth therefore forces the victims themselves to make use of all the methods and means of scientific analysis in order to succeed with their claims.[19]

Therefore, citizen-initiated science does not reject science; it engages it, being at once suspicious and trusting of it.[20] The relationship between established politics and science is well recognized; however the relationship between subpolitical movements and science is not well explored. It is clear that subpolitics does not exclude research-based science. Subpolitical movements may even use bureaucratic structures to challenge the official position (i.e. environmental impact statements), but they don't rely on quantitative

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[15] Sheila Jasanoff. *States of Knowledge: The Co-Production of Science and the Social Order.* (London: Routledge, 2004), 3.
[16] Ibid.
[17] Ulrich Beck, *World Risk Society* (Cambridge: Blackwell Publishers, Ltd, 1999), 39.
[18] Ibid., 40.
[19] Beck (1992), 71.
[20] Ibid., 72.

judgments entirely, taking into account social and cultural aspects of environmental policy and research as well. Through such direct democracy risks may be identified, and distributed based on local production of knowledge.

The questions raised in this research answer whether the risk management processes of oil development have included stakeholder knowledge in proportion with their risk exposures, and whether in turn, risk-based decisions have mobilized affected stakeholder groups to fight for increased input. The concepts of manufactured risks, official risk determinations, and subpolitics are crucial to this research, and the methodology employed within relies on Beck's framework. The case studies presented in this thesis are evaluated based on three criteria. To begin with, all cases will be analyzed by their risk contents. Each case study begins with a discussion of risk, paying close attention to the relationship between risk, time and space, and the capacity of protective institutions to control risks. Risk is an important criterion for identifying signs of RS. This inquiry focuses on the types of risk tackled by administrators and stakeholders, and these risks are evaluated for signs of change in accordance with Beck's changing pillars of risk. Changes in risk compensation (or its cost of gain), risk restriction (or its systemic manageability), and safety across temporal and spatial limits are good markers for the presence of RS conditions. The three pillars of risk encompass the essence of the RS thesis, and we may cross-reference Alaskan trends by checking for changes in these pillars. If it can be established that oil resource development exposes North Slope residents to changing risks as described in RS theory, then the next step is to examine the inclusion of these residents' social rationality on the acceptability of these risks: if policy decisions do not account for the value premises inherently involved in risk definitions (statements on how we want to live), the administrative institutions managing oil resources establish a technocratic hegemony over scientific and social truths.

Therefore the second criterion for evaluation of each case is based on the uptake of science in policy decisions. This evaluation identifies stakeholder group hierarchy in the political process, and probes the success of available avenues for IK input in decision-making. This area of research investigates weaknesses in the administrative devices

designed for uptake of citizen input, analyzing areas of conflict between risk managers and locals during knowledge co-production. According to RS theory, we find locals increasingly marginalized in scientific policy matters. This discussion identifies conditions for RS, which exacerbate diverging risk rationalities among Alaskan stakeholders, and set the stage for subpolitical negotiations.

The third, and final criterion in the evaluation of each case is a scrutiny of the connections between changing risks, ineffective inclusion, and policy disputes. This analysis focuses on the links between the technocratic hegemony of administrative institutions, growing awareness of risks, and subpolitical challenges to the use of science. Beck's RS thesis suggests that due to the catastrophic nature of risks, the inability of protective institutions to manage risks, and diminished citizen input in risk management, a new way of conducting politics emerges at new sites. Subpolitics is a way for citizens to identify important issues based on local needs, and it is a way to shape knowledge from below. This section investigates the extent of citizen action in each case, in order to find out what shape subpolitics has taken in the pursuit of IK inclusion, and risk mediation in Alaska.

These three selected criteria provide the framework for assessment of the case studies. Analysis of these key indicators of RS is a reliable methodology for considering the focal questions of this thesis: Is risk mediation inclusive of IK in proportion with the risks imposed upon North Slope residents by oil resource development? In what ways does the inclusion IK contribute to policy disputes, and contested scientific truths? Answers to these questions can help formulate new strategies for a regulatory scheme, one in which complex issues of risk and uncertainty are approached using multiple facets of understanding, and cultural as well as scientific value premises are accounted for during decision making.

1.3 The setting

Alaska presents an excellent case study to explore the risk society thesis based on its demography and geography. Alaska's geographical attributes -its relative physical isolation from the rest of the U.S., its unique climate, low population density, combined with its natural resource assets- make for an economy dependent on oil.

> In strictly economic terms, Alaska is an oil-dependent state, exhibiting the lack of diversification typical of all resource-dependent states. In 1991, approximately 86 percent of unrestricted general fund revenues came from oil and gas industry activities, and although that amount declined to 79 percent in 2000, with the price surges of subsequent years the share had increased to 88 percent by 2005.[21]

Oil resource development is a good example of what Beck calls the "dilemmas of modernization", because it inherently couples with the problem of decision-contingent risk management. Despite great advancements in technologies employed in oil extraction, and despite environmental protection policies enacted at nearly all levels of government, the potential for environmental hazards remain. The development of Alaska's natural resources carries environmental risks in varying degrees of uncertainty, since it is extremely difficult, if not impossible, to precisely quantify the chance of oil spills, or to calculate local hazards from toxic waste disposal, or to predict subsistence impacts such as change in wildlife habitats as a direct result of oil production. Since these risks are the result of the processes of modernity, they fit the definition for Beck's *manufactured risks.* Science uncovers as many questions as answers under expert risk calculation systems. New challenges in resource management and new environmental crises have highlighted the significance of inclusion of new knowledge forms within the political process. The second and third case studies focus on this challenge in oil development, regarding the inclusion of IK in North Slope-relevant oil policies. The North Slope Borough (NSB) provides an excellent source for studying the realm of RS. The NSB covers a vast land area at nearly ninety thousand square miles, and it

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[21] Jerry McBeath et al., *The Political Economy of Oil in Alaska: Multinationals vs. the State.* (Boulder: Lynne Rienner Publishers, Inc., 2008), 4.

encompasses the human communities of the entire North Slope region.[22] Based on 2008 census figures, the population size is 6,615, and nearly 70 percent of the population is of Inupiat Eskimo descent.[23] The NSB receives tax revenue from oil and gas properties, and depends on these resources for providing basic services, and maintaining village infrastructure. Subsistence activities are also very important to NSB residents, as much for providing food as for cultural survival. The simultaneous presence of modern risks, the pressure of the economic imperative, and Alaska Native residents' engagement in subsistence activities often result in conflicting dialogues over resource uses and priority setting.

Alaska's unique demographic assets provide exceptional opportunities for complementing conventional scientific practices with other knowledge systems. Alaska's sizeable indigenous population, (approximately 15% of Alaska's total population per the 2000 Census), possess intimate knowledge of local ecosystems based on long-term observation of, and interaction with, their environment.[24] According to the RS theory, we would expect to find an increase over time in the inclusion of expert advice in policy making, and a simultaneous agitation of subpolitical groups as they organize to try to influence policy. Indeed, Alaska Native peoples have felt marginalized by the institutional apparatus responsible for determining the meaning and extent of risks affecting their communities, and have mobilized to advocate inclusion of their IK in management decisions. As managers direct Alaska's resource development and preservation, and as citizens seek to be heard in the process, the signs of RS are increasingly present in Alaska.

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[22] *Science Strategy.* North Slope Science Initiative. Internet; Available from http://www.northslope.org/ , retrieved on February 18, 2010. A-6.
[23] Ibid.
[24] "FAQ Alaska", *Statewide Library Electronic Doorway*; available from http://sled.alaska.edu/akfaq/aknatpop.html; Internet; Retrieved on October 16, 2009.

1.4 Problem context and framework

Three carefully selected case studies are presented in this work. These three cases were chosen because they reveal the intersections of knowledge and politics when stakeholders strive to influence environmental risk-relevant policy during the development of oil resources. The first case is intended as a backdrop to establishing the presence of RS in Alaska. This case is presented as one of the earliest, and strongest examples of subpolitical pursuits for knowledge inclusion in risk assessment. It is an in-depth study, which evaluates the weeklong Workshop on Arctic Contamination, held May 2-7, 1993 in Anchorage, Alaska, and the subsequent founding of the Alaska Native Science Commission (ANSC). The Workshop illustrates the conflict between stakeholders' rationale when faced with exclusion from expert risk calculation systems, and explains how such conflicts often become the genesis for subpolitical movements. In order to focus on the relationship between subpolitical groups, risk and knowledge production, this case provides a careful study of the 'Traditional Knowledge and Contaminants Program' of the ANSC.

The second and third case studies provide recent examples of conflict spurred by the power of RS in Alaskan oil politics, and provide a glimpse into the current state of RS in the Alaskan context. Through these case studies, the research looks beyond the RS theory to examine what problems may emerge when alternate knowledge claims reach expert institutions. These current cases reveal the ongoing struggle to define the meaning and extent of inclusion. The second case study describes the contentious participation of the North Slope Borough in the State of Alaska's Coastal Management Plan program, and ongoing conflicts since major reforms came into effect in 2005. The third study examines the controversy surrounding a federal initiative, the North Slope Science Initiative (NSSI) created by the Energy Policy Act of 2005, and whether the Arctic Slope Regional Corporation is a valid vehicle of LK, and IK in studying the impact of oil development on subsistence. Although the goal of this research is to examine state-level use of science in risk mediation and the NSSI is a federally funded entity, it is a multi-agency initiative with heavy state involvement. The NSSI is a relevant case to this

discussion of risk and knowledge inclusion within Alaska's oil management regime, because its directive is to gather knowledge on the effects of oil development on the North Slope region, and to inform policy at all levels of government. These case studies were chosen to highlight the predicament of modern risks and their management in resource management consistent with Beck's RS thesis.

1.5 Sources and methods of data collection

This research relies on previous body of work by Ulrich Beck titled *Risk Society: Towards a New Modernity* (1992), and *World Risk Society* (1996), which examine the changing nature of risk and the reforming influence risk may have on knowledge production and ultimately on the entire social order. To complete this assessment of risk in contemporary societies, the study evaluates risk in a variety of contexts through other risk theorists as well (some supportive and some critical of Beck's social theories).

In collecting evidence to explore the Alaskan RS experience, both oral and archival sources were used. A series of semi-structured interviews were conducted with state and borough agents, ANCSA Corporation representatives, and private agency spokespersons. Archival sources included in this research come from both electronic resources such as World Wide Web pages, as well as textual analysis of printed materials.

1.6 Organization of the thesis

Chapter 2 starts with an introduction of the many dimensions of knowledge. Beginning with a general literature review on the interfaces of science and politics, the chapter is a conceptual analysis of knowledge within democratic systems. The chapter continues with an introduction and critique of Beck's RS thesis, vital to this evaluation of knowledge production inside Alaska's oil resource administration. *Chapter 2* addresses the following questions: What are science and politics? How does Beck's RS thesis fit into the discussion of science and politics?

Chapter 3 presents the first in-depth study making the case for the arrival of the risk society on the Alaskan political scene. This case study presents an example in which

the RS experience mobilized stakeholders to pursue meaningful inclusion of their knowledge in expert risk calculation and management. This case does not strictly relate to oil resource development. Through a broader approach, this case demonstrates the evolution of subpolitical activism following widespread effects of manufactured risks, and the subsequent transformation of stakeholder transactions in the Alaskan context. This case therefore presents a general discussion of the Alaskan RS experience. What specific signs suggest that RS conditions have begun to shape science and politics in Alaska?

Chapter 4 starts with an overview of Alaska's oil administration regime. The chapter begins with a brief political timeline of Alaska's oil policy development, selecting notable events in Alaska's political history based on their significance to Alaska's progression towards RS. The chapter continues by presenting current examples of conflict under RS, with specific focus on Alaska's management of oil resources. This chapter reveals two cases of conflict that arose during inclusion of alternate knowledge systems within expert institutions. These cases reveal the struggle knowledge holders and administrators face as they attempt to cooperate amongst each other, and begin to deal with the complexities of inclusion. This chapter illustrates that gaining inclusion is not the end of the road, but rather it is the beginning of new struggles as stakeholders strive to influence the extent of inclusion.

Chapter 5 provides a final analysis of stakeholder transactions under conditions of RS in Alaska's oil development policy. The thesis concludes the meaning of the Alaskan RS experience for the present, and provides recommendations for conflict resolution for the future in the development of Alaska's oil resources. In *Chapter 5* the thesis concludes with an analysis of contemporary risks and the inclusion of IK in the mediation of these risks in Alaska. The goal of the final analysis is to reveal the role of knowledge inclusion in the agitation of subpolitical pursuits, and to offer a set of recommendations for a more effective collaborative scheme, through a discussion of the following questions: Is the inclusion of IK in official environmental risk determinations in proportion with the risks imposed by oil policies? What are some of the examples of

successful inclusion of alternate science forms, and what lessons do they hold for Alaskan stakeholders?

Chapter 2

Citizens, Science, and Politics in the Risk Society

2.1 Introduction

My research examines the status of science, experts and citizens in the public sphere, and reveals the tensions that exist between science and environmental politics in the risk society. This chapter introduces science and politics and their intersections in RS. In order to begin, it is important to define who the stakeholders are in this discussion. The case studies presented within this thesis group stakeholders together based on political affiliation, geographic location, and scientific expertise. The term *stakeholders* is used throughout to reference those individuals or entities (such as corporations and political subdivisions), who have direct vested interest in the issues presented here. Their interest may be expressed through political awareness (such as active participation in the public sphere, or tribal affairs), or socio-cultural awareness (such as participating in production of alternate knowledge). Some stakeholders live near the sites, which are affected by policy decisions, thus by simply being in close proximity to risk sources, they are stakeholders in the debate. Therefore, the list of stakeholders discussed in this research may include national and state publics (both Native and non-Native), federal and state agencies in charge of regulating oil resources, many corporations (both Native and non-Native), Borough and City Departments, Tribal governments, and interest groups. As stakeholders debate policy issues, they each bring with them their own set of rationalities, and priorities. Science and technology are often blamed for environmental degradation, but they are also often trusted with identifying solutions.[25] This paradox is at the source of much conflict in risk regulation, and stakeholders often disagree over risk-benefit analyses. The politics of knowledge is fraught with such tensions.

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[25] Frank Fischer, *Citizens, Experts, and the Environment: The Politics of Local Knowledge* (Durham: Duke University Press, 2005), 87.

2.2 The Politics of knowledge

In order to interpret the link between science, politics, and the ordinary citizen, we must identify their meanings. In this discussion, I will examine science in the western, or Eurocentric context, because it is the dominant form of knowledge within western regulatory agencies. Both science and politics have various definitions, but science perhaps is the one associated with the greater sense of ambiguity. Simply stated; science is in pursuit of knowledge. In a Eurocentric context, science strives to include "inquiry processes that could be made value free and thus capable of transcending any particular cultural context."[26] Scientific endeavors thus aim to achieve neutrality, and ideally, science is an objective discipline. Politics is anything but objective, since it is a process of collective decision-making through the process of bargaining, negotiation, and compromise.[27] Political issues often come to the center stage of politics when "opposing groups try to affect government action to resolve conflicting goals."[28] In such political conflict, the ordinary citizen is anyone without particular expertise, but with importance in the political realm via the power to vote. The political lives of ordinary citizens could be observed simply as their participation in the political process, or, on a more subtle level their situation in a complex society as objects influencing, and being influenced by the state, special interest groups, and the market economy.

What is then, the role of science in politics? As stakeholder groups often disagree on issue priorities, and issue resolution, scientific knowledge is often summoned as a neutral mediator. Science is suited to contribute to conflict resolution only in simple decision contexts, while in cases of highly complicated context, looking to science to enable a political consensus may indeed compromise both the odds for consensus, and the value of science in policy making.[29] So, can science ever be purely neutral, or objective?

> Much influential, but unfounded, ideology of our time involves an extension of science well beyond its legitimate limits, so that social and

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[26] Figueroa and Harding, 1.
[27] Roger A. Pielke, Jr. *The Honest Broker: Making Sense of Science in Policy and Politics.* (New York: Cambridge University Press, 2007), 31.
[28] J. Richard Udry, "The Politics of Sex Research," *The Journal of Sex Research* 30 (May 1993):103.
[29] Pielke, 8.

> political problems are construed as scientific ones, and 'solutions' offered in a way that obscures the social and political issues at stake. For example, we have illegitimate extensions of biology and social Darwinism and sociobiology posing as explanations of social phenomena, thereby disguising the political realities and serving to justify various kinds of oppression such as the poor or women or racial minorities[30]

It is evident that social and cultural values influence knowledge production, and its place in policymaking, especially with regards to environmental issues. Environmental policymaking is complicated by opposing intellectual absolutes, such as ecological versus market viewpoints.[31] A still prevailing belief in economic primacy, that a man's economic needs come first, rejects ecological ideology as a postmodern indulgence. Departing from pure "economism" takes the equivalent of a religious conversion towards holistic ecological ideologies without absolutes.[32]

As the status of science has come into question in democratic societies, the very foundation of democracy may be indicted as stakeholders debate who should be qualified to produce science, who should decide on *what constitutes as science,* and to what extent science may be included and relied upon in policy decisions. The relationship of science and democracy has inherent ambiguities, since science has, on the one hand, enormous value to society, but misused, science may lead to bad decisions, political gridlock and threaten the sustainability of its own enterprise.[33] Science has a dual role in society and public decisions, for it is both the cause of environmental instabilities, and a tool for better policy making.[34]

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[30] Alan Chalmers, *Science and Its Fabrication.* (Minneapolis: University of Minnesota Press, 1990), 125.
[31] Lynton K. Caldwell, *Environment as a Focus for Public Policy,* ed. Robert Bartlett and James Gladden. (College Station: Texas A&M University Press, 1995), 14.
[32] Ibid., 271.
[33] Pielke, 38.
[34] Caldwell, 14.

2.2.1 Science and democracy

Throughout history, the pursuit of knowledge meant more than just an autonomous entity, the scientist, conducting research, performing experiments, recording findings and publishing conclusions for the public. Inevitably scientific works were judged not only amongst peers, but also by the authorities in place, be it state or church, and by average citizens as well. Science often had to excel based on accuracy, and merit, but also based on social and political correctness. Galileo's struggle with church authorities in Rome is just one such historical example of science operating under undemocratic conditions. How has the relationship between state, science and the public changed? Can science and the culture within which it operates be separate entities?

Science and technology are human activities, and not some sort of alien invasion into our lives.[35] Yet scientific methods are aimed to be impersonal. Whatever can be produced by one scientist should be reproducible by another. Scientific observations and measurements are intended to be objective and testable, relying on the notion that nature's underlying principles are relatively constant.[36] Citizens at times trust this neutrality ideal of science as a reliable driver behind policy decisions, while they may also question how experts will frame political issues through the *use of* science. Just as science may be subject to power structures, so may power operate through the use of science to organize society. Many consider this normalizing power of science positive based on the promise that human welfare goes hand in hand with advancing human knowledge.[37]

But as citizens have been gaining political influence throughout modern history, simultaneously so have bureaucratic organizations and technical expertise.[38] The fact that science and its technological byproducts bear responsibility in the incredible growth

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[35] Alan Irwin, *Citizen Science: A study of people, expertise, and sustainable development* (London: Routledge, 1995), 2.
[36] Jacob Bronowski, *The Common Sense of Science* (Cambridge: Harvard University Press, 1978), 57.
[37] Sheila Jasanoff, 'Let them eat cake': GM foods and the democratic imagination. In *Science and Citizens: Globalisation and the Challenge of Engagement*, ed. Melissa Leach et al., 183-198. (New Delhi: Orient Longman, 2007), 196.
[38] Fischer, 6.

of expert networks is evident in the global rise of the knowledge society, which transcends the boundaries of nation states.[39]

> To the extent that we can speak today of 'only one earth', it is science and technology perhaps more than any other form of human activity which have made the singularity a meaningful concept. The problem for governance, then is not the spread of techno-specific cultures in and of themselves, but rather their increasing isolation from other institutions and modalities of deliberation (...) more important still is the loss of reflexivity within the scientific enterprise itself, a phenomenon that disables modern science from recognizing, and admitting, how profoundly normative are its visions of progress. Science enters the political playing field seemingly shorn of values and prejudices; automatically coded as a 'public good', it offers no further justification for its existence, nor feels any need to expose its internally generated agendas to wider public inspection.[40]

Western democratic systems are indeed highly complicated institutions, in which knowledge can organize society. Foucault observed that science and knowledge are normative forces in society, and noted that the intricacies of individual identity and autonomy are tied in with the dominant power structures.[41] His studies focused on the invisible links between subject, knowledge, and power. Foucault described how through classifying individuals, and rationalizing the concepts of "normalcy", dominant institutions of knowledge control political, social and economic discourses. He believed the relationship between rationalization and excesses of political power to be evident.[42]

This relates directly to another key theme in Beck's thesis that recognizes the powerful influence of science over our social order. Science can legitimate the risks of modernity, such as the development and employment of hazardous technologies, and even the introduction and widespread use of toxic materials, by setting acceptable levels

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[39] Jasanoff (2007), 196.
[40] Ibid.
[41] Michel Foucault, *The Foucault Reader,* ed. Paul Rabinow (New York: Pantheon, 1984), 14.
[42] Ibid., 13.

of toxicity. Science has, at various times in history, been a very effective instrument of power when subordinated to power structures. For example, natural sciences have been used to conduct experiments to prove that dominance hierarchies are natural phenomena.[43] Haraway writes that by observing domination in primate social groups, the political perspective of domination was legitimized as normal based on primate studies of the 1930s and 1940s. The way scientists classified or deconstructed the primate social groups was embedded in a structure of dominance typical to *human* hierarchy. Their conclusions as such, says Haraway, simply mirrored this already existing human prejudice into primate behavior in order to validate aggression, competition and hierarchy in human behavior. At times, ideological functions can take on the guise of science merely to impose or reinforce social order. The political debate over environmental risks further highlights the link between knowledge, power and rationalization.

Many industry representatives, scientists, and economists subscribe to a risk-based approach to environmental regulation, as opposed to technology-based, or incentives-based regulation. The rationale behind the risk-based approach is that *good science* and *rational choice* should drive regulatory decisions, instead of qualitative ideals such as the public's apprehensions, or prudence and precaution.[44] The outcome of such dialogues among policy makers, experts and citizenry is a factor of the political culture within which it takes place. A comparison of US and European regulatory tendencies prove that social values bear influence on the relationship between rationality, science, power and citizenry.[45] In fact, risk regulation may largely be shaped by public demands for accountability: the traditionally adversarial, transparent US policymaking process has caused officials to rely on a system of objectivity, of formal, quantitative calculations of risks, costs and benefits. European political culture on the other hand relies on negotiations, and consensus building, which in turn has conditioned regulators to be

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[43] Donna J. Haraway. *Simians, Cyborgs, and Women: The Reinvention of Nature.* (New York: Routledge, 1997), 21.
[44] Norman J. Vig, and M.E. Kraft, *Environmental Policy: New Directions for the Twenty-First Century,* (Wahsington, D.C. : CQ Press, 2006). 225.
[45] Sheila Jasanoff, *Designs on Nature: Science and Democracy in Europe and the United States,* (Princeton: Princeton University Press, 2005), 18.

dependent on subjective, qualitative judgments of experts. Judging from Jasanoff's account, it could be said that, ironically, the securities sought by the US public through demands for institutional responsibility, accountability, and rational explanations, has caused those institutions, and relevant policies to now be somewhat shielded from public pressures. In other words, before official action can be taken, scientific reason must be present. In this manner, scientific rationalization may reinforce excesses of power by creating an atmosphere of elitism among experts, and marginalizing ordinary citizens.

On the other hand, European corporatism, bureaucratic control over public participation, and the culture of expert judgment, and *qualitative* reasoning (all of which initially largely excluded the lay person from policy making), has allowed the public to fight for stricter consumer protection, even in the absence of sound scientific data. Collective criticism of new technologies based on a *lack of* scientific certainty in their safety may lead to regulation for the sake of precaution. Such precautionary regulatory tendencies have typically been present in European regulation over the past decade.

As politics and science interface, they together shape the political lives of ordinary citizens. When highly specialized issues surface in a democratic public arena, citizens are expected to judge their merit. Occasionally, individual research projects are brought into light, and the public is asked to come to a moral consensus on specific issues, priority setting. Other times science is at the center of partisan political rhetoric. Such is the democratic process. It relies on citizen participation, the influence of interest groups and market considerations. But politics and science form another, less visible alliance, which normalizes various dominant institutions. Although science ideally is objective, it is also a human endeavor, and as such it cannot escape partiality. One view on the politics of knowledge is that it is a set of overt actions and policies which intrude into "pure" science, but there is another, different notion of politics, where power is exercised less visibly, less consciously, and *not on* but *through* the dominant institutional structures.[46]

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[46] Sandra Harding, After the neutrality ideal: Science, politics, and "strong objectivity". *Social Research* 59 (Fall, 1992) 567-587.

2.2.2 Alternate knowledge forms

Scrutiny of expert scientific models has led to the mobilization of alternate knowledge systems, because such scrutiny has revealed gaps between expert definitions of risks and risk priorities and those of the general public. Citizens often get directly involved at the root of scientific process, examples of which may include participation in identifying problems, data collection, and analysis (participatory science), and political activism through community meetings, public hearings and comment periods. There are many examples of participatory science, in which ordinary citizens take part in the collection of data, and in the monitoring of ecological changes. Such citizen science builds on local knowledge, and often engages expert institutions directly. There are parallel discourses through which the public may engage expert science.

The case studies presented in this thesis focus on the inclusion of indigenous knowledge (IK) in expert decision-making. As discussed in *Chapter 1,* there are subtle differences between traditional ecological knowledge (TEK) and IK, although these terms are often used interchangeably in literature. IK is defined as the local knowledge held by indigenous peoples or local knowledge unique to a given culture or society.[47] The IK of an Alaska Native person is most often practiced through subsistence activities, such as hunting, fishing and gathering. Subsistence is an applied form of IK, because subsistence activities rely on the knowledge collected through the experiences and teachings of the community, "garnered from hundreds of years of their patient interrogation of the landscape."[48] IK about subsistence is practical knowledge, such as detailed understanding of the natural history of local wildlife and plant species, or having the ability to predict weather patterns, or knowing which tools are best for a job.

IK is not a compartmentalized local knowledge and classification system, rather it is an integrated package that includes knowledge of environmental practices, management systems, social institutions that provide rules, and worldviews that constitute the ideological basis of these systems.[49] TEK is used to describe knowledge

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[47] Berkes, 8.
[48] Barry Lopez. *Arctic Dreams.* (London: Vintage, 2001), 6.
[49] Berkes, 24.

specific to ecological relationships, such as relationships of living beings with one another and with their environment.[50] IK is a term used to describe a broader set of knowledge not confined to ecological relationships, rather it is knowledge about many fields of ehtnoscience. Both IK and TEK offer knowledge with added theoretical and cultural layers, but TEK is considered a subset of IK.[51] This study is focused on integration of IK in resource management, in order to offer a wider view of knowledge uptake in resource management not restricted to ecological relationships. For example, the classification of snow, freshwater ice, and sea ice are examples of IK without the added element of ecological relationships.[52] TEK is also discussed as needed when it is referenced specifically in resource policies.

There are practical differences between western science and IK. In traditional Native American societies, science is not separate from the culture within which it is observed and interpreted. Seemingly there are no boundaries of science and politics, as knowledge *is* the guiding set of principles by which people abide. Knowledge doesn't have an independent, transforming role separate from its people. Furthermore, knowledge is not broken down into modern concepts of disciplines or areas of expertise, because doing so would disrupt the interconnectedness of the universe. Oscar Kawagley, a Yupiak elder sums this up: "For the Yupiak people, culture, knowing and living are intricately interrelated."[53] Fischer describes the same phenomenon within the wider context of local knowledge. "Whereas science seeks to theoretically separate its knowledge from the culture in which it is produced, local knowledge remains inherently associated with, and interpreted within, the specific culture in which it is produced."[54]

> In both developing and developed society contexts, therefore, it has been accepted, at least in principle, that science can gain democratic public legitimacy only if it recognizes its own need to understand itself in relation

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[50]Berkes, 6.
[51] Ibid., 8.
[52] Ibid.
[53] Oscar Kawagley (University of Alaska Fairbanks, Alaska Native Science Commission). Personal Communication, June 2007. University of Alaska Fairbanks campus.
[54] Fischer, 195.

> to these other cultures, and to learn to respectfully negotiate with, and accommodate to them, rather than dismiss them as vacuous, untrustworthy and emotive.[55]

Cultural diversity yields different scientific discourses through varying perceptions of reality. Perhaps this difference in observation is to be celebrated, and it may be where the real potential for knowledge co-production lies. In terms of breaking down the progression of RS politics in Alaska, the presence of Alaska Native peoples and their IK then proves to be an ideal condition for the expert-citizen divide, and for the mobilization of subpolitical groups.

2.2.3 The concepts of inclusion and participation

What does inclusion in politics really mean, and where and when should it happen? What motivates expert institutions to seek input from the public? Policy analysis has traditionally safeguarded itself against what it considered to be the unsubstantiated opinions of the general public, failing to recognize its dependence on such everyday knowledge.[56] This is because the relationship between the public (or non-expert) judgment, and science is a symbiotic one; citizens often rely on science to decipher many of life's issues, while science relies on certain social expectations and public value judgments. "Science, no less than politics, must conform to these established ways of public knowing in order to gain broad-based support – especially when science helps underwrite significant collective choices."[57] Beck also notes these competing, yet codependent value systems of so-called 'scientific' and 'social' rationalities. Scientific rationality refers to dominant devices of science and technology utilized by expert systems, while social rationality refers to cultural evaluations based on everyday experiences.[58] Just as science depends to some extent on social rationality for legitimation, so do social rationalities of risk depend on scientific arguments. Laypersons do not routinely reject expert claims, but they are both "*critical* and *credulous* of

[55] Leach et al., 9.
[56] Fischer, 194.
[57] Jasanoff (2005), 249.
[58] Mythen (2004), 56.

science."[59] Green movements face this paradox as they distrust scientific authority yet have nowhere else to turn for definitive answers.[60] Due to the ever-growing number if scientific policy issues, expert institutions and citizens must find a way to define their relationship within the constantly shifting boundaries of science and society.

> The form and direction taken by our science and technology are no longer seen as inevitable (...) instead they are increasingly recognized as being open to shaping by individual creativity, collective ingenuity, cultural priorities, institutional interests, stakeholder negotiation and the exercise of power. The irony is thus intensified. Just at a time when globalization seems to render the governance of science and technology more obscure, remote and inaccessible, so we begin to appreciate the inherent openness to the exercise of human agency and –potentially- to deliberate social order.[61]

In recent years, there has been a push to increase public participation in issues involving science and technology, and a variety of organizations have hosted events to respond to crisis and concerns over risks from technology, to gain input in decisions, or to explore future development options.[62] Especially when it comes to issues about scientific and technological choices, the ideal of a contemporary society is that it strives to include all relevant constituencies in the decision-making process.[63] The rationale behind allowing for participation is that it is a right, and a path to becoming a full citizen; however the extent such an action-based learning process grants empowerment in a wider political arena depends on the context.[64] In other words, evaluating the efficacy of inclusion and participation in policy processes is a difficult task. Inclusion and participation are

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[59] Beck (1992), 72.
[60] Steven Yearley, Nature's Advocates. In *Misunderstanding science? The public reconstruction of science and technology,* ed.Alan Irwin and Brian Wynne, 172-190. (Cambridge: Cambridge University Press, 1996), 176.
[61] Andy Stirling, Opening up or closing down? Analysis, participation and power in the social appraisal of technology, in *Science and Citizens: Globalisation and the Challenge of Engagement,* 218-231. (New Delhi: Orient Longman, 2007), 218.
[62] Leach et al., 215.
[63] Stirling, 220.
[64] Leach et al., 216.

mutually dependent on each another, and we cannot evaluate one without the other: inclusion doesn't happen without stakeholder participation, and similarly, stakeholders cannot participate when avenues for inclusion do not exist. The efficacy of knowledge co-production is influenced by the political impetus behind the collaboration. Motivation affects the types and results of stakeholder participation.

Inclusion implies a top-down directive, while participation refers to a bottom-up implementation of involvement. The motivation for inclusion on behalf of organizations can include crisis response, gaining public input, weighing development options, reputation management, among others, and these may have a huge, normative role in the success of participation. "The framing of the modes and scope of participatory initiatives" can result in "a disciplining and thus participation-closing role."[65] Ethridge offers three reasons for externalizing administrative decisions, and questions whether inclusion is motivated by concerns for democratizing agency decisions: (1) a legal movement to restrict administrative authority, (2) legislative movement to constrain the aggressiveness of regulatory agencies with delegated legislative power, and (3) generalized interest in maintaining independent political power bases.[66]

On the other hand, the incentive to participate in the public sphere can be defined as *normative* (it is the right thing to do), *instrumental* (it is a better way to achieve particular ends), and *substantive* (it leads to *better* ends).[67] These three perspectives imply very different relationships with political, economic and institutional power structures: normative perspectives aim to ameliorate "undue exercise of power in social choice", instrumental perspectives have been conditioned by existing power structures, and maybe intentionally or not, tend to reinforce them, while substantive perspective focuses on authenticity, such as the genuineness of equity, or whether the process of

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[65] Leach et al., 11.
[66] Marcus E. Etheridge, Procedures for Citizen Involvement in Environmental Policy: An Assessment of Policy Effects. In *Citizen Participation in Public Decision Making,* ed. Jack DeSario and Stuart Langton, 115-131. (New York: Greenwood Press, 1987), 117.
[67] Stirling, 220.

public participation really embodies diversity.[68] Participation is largely motivated by a newfound desire to reform the "largely undemocratic expert-client relationship."[69]

Various types of civic engagements have evolved over time. Initially, alternative movements within professions established so-called advocacy research practices, but failed to achieve authentic participation due to the fact that citizens allowed themselves to act as audiences while experts still spoke for them.[70] The Administrative Procedure Act (APA) of 1946 set specific regulation for public hearings prior to administrative decision-making. The Federal Register Act of 1935 is an even earlier example of mandated public process, as it made available official documents related to formal actions.[71] The environmental movements of 1960s-1970s, and concurrent avalanche of environmental legislation further cemented the idea of external participation and influence of agency actions.

Public Access to Information campaigns such as the U.S. Freedom of Information Act, followed by public information campaigns, and science education programs promoted the flow of information from experts to laypersons.[72] However, local knowledge was still excluded from the policy process, as the policymakers were informing the public, and not the other way around. Following the emergence of advocacy research, participatory inquiry appeared as the solution to this problem, as an effort to directly include citizens and their local knowledge in expert exchanges: science and expertise have been the prime targets of such countercultural opposition, especially in the case of the environment.[73] Aided by new technological frontiers such as the Internet, citizens have been empowered to gather information, to form new associations, and to explore new potentials arising from being connected. Yet, inclusion remains frequently riddled with tension, as expertise and alternate movements merge during participation. The question often emerges: "How do we analytically integrate empirical

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[68] Stirling, 223.
[69] Fischer, 172.
[70] Ibid., 170.
[71] Etheridge, 116.
[72] Irwin (1995), 110.
[73] Fischer, 171-172..

and normative knowledge?"[74] And this question leads to another dilemma, one of collaborative decision-making. What is the best avenue to involve the public as a partner in negotiating modern risks? How might the public move beyond their role as informants, and become full partners in risk management?

2.2.4 Finding common ground: Implementing indigenous knowledge in policy decisions

The dominant scientific paradigm in western political systems has been slowly extending scientific scrutiny towards truth claims of other cultures, resulting, in some cases, in collaborative knowledge production schemes, especially in areas of ecology. Changes in scientific climate have also occurred in many indigenous societies, as some byproducts of western science and technology have in turn been accepted and used to empower self-determination causes, such as indigenous land claims.

> "Just as maps were powerful tools of European imperialism in the 18th and 19th Centuries, GIS returned the favor by supporting aboriginal land claims with presentations in a language that dominant-culture courts could appreciate. And many tribes in the western United States use unmodified commercial GIS to manage tribal lands and maximize productivity of forests and grazing lands, just as private land holders or government agencies might do."[75]

The relationship between western and traditional ways of knowing is a reciprocal one, but for the purposes of this research, this discussion focuses on the acceptance of IK into the policy processes of the administrative state. The inclusion of alternate knowledge forms such as IK, in top-level policymaking merits special discussion, because engaging IK in a resource management dialogue carries added cultural and social knowledge layers which may complicate cooperation. It is important to consider these issues that may arise when applying IK to a joint resource management regime. Issues such as colonialism

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[74] Fischer, 191.

[75] David Mark, "Cultural Differences, Technological Imperialism, and Indigenous GIS," *Directions Magazine,* 23 May, 2006. Available from: http://www.directionsmag.com/article.php?article_id=2173; Internet; retrieved on February 21, 2010.

and cultural destruction, the need for self-determination and protection of intellectual and cultural property rights, may make convergence difficult.

Comanche educator and musician Dr. Cornel Pewewardy notes, that power and control work when we have the ability to define reality and getting others to respond to our definition as if it were their own.[76] He notes that science should not be a privileged field limited to those who subscribe to a particular mythic tradition. He believes that Native Americans should resist colonization of the mind, and nurture the tradition of holistic thinking in order to avoid cultural extinction. The effort to gain recognition for an IK system is inherently influenced by the struggle to put an end to colonization, be it physical or intellectual. The economic imperatives of an increasingly globalized, modern social order dictate collective thinking and policy priorities, often at the cost of ecological and other values and practices outside them. "Globalization is essentially 'action at distance'; and, unlike in colonialism, which required the physical presence of managers of capital, their physical absence in global control of capital flows predominates over their physical presence."[77] In other words, colonialism no longer comes in ships, but rather through the normative processes of modernization.

The other side of the coin, acknowledgement and inclusion of IK is also a complex matter however, because issues of authority, autonomy, and moral conflicts can arise if IK is removed from its context.[78] The postmodernist criticism of IK inclusion sees the attempt to translate and institutionalize IK in resource management as an extension of modernist hegemony.[79] Postmodernists warn that integration may in fact reinforce western biases by taking knowledge out of contextual meanings, and by forcing indigenous peoples to justify their views in a scientific language foreign to them.[80] Proponents of IK inclusion argue that indigenous communities must engage the

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[76] Keith James. *Science and Native American Communities.* (Lincoln: University of Nebraska Press, 2001),

[77] Peter Harries-Jones, The 'Risk Society': Tradition, Ecological Order and Time–Space Acceleration. In *In the Way of Development: Indigenous Peoples, Life Projects and Globalization,* ed.Mario Blaser et al., 279-298. (London: Zed Books, 2004), 283.

[78] Leach et al., 9.

[79] Eugene S. Hunn et al., Huna Tlingit Traditional Environmental Knowledge, Conservation, and the Management of a "Wilderness" Park. Current Anthropology 44 (2003):S79-S103, S79.

[80] Ibid., S80.

administrative "encompassing polity that holds ultimate power", and that it is in the best interest of these communities to foster a dialogue, however imperfect, with resource managers in charge.[81]

In order to minimize the possibility of a biased translation of IK, and to maximize the benefit of its inclusion for indigenous communities, the rights of indigenous peoples to exercise control over research conducted within their territories, or which uses their people as subjects of study, are protected under U.N. human rights laws and numerous declarations by indigenous governing bodies.[82] However, it wasn't until recently that indigenous peoples have begun to assert control over their IK in order to fight the perception of IK as public domain.[83] IK is a valuable resource and deserves to play an active role in a dynamic democracy, but care must be taken to avoid its exploitation. The use of traditional knowledge is often very political because "it threatens to change power relations between indigenous groups and the dominant society."[84] IK integration may also involve intellectual property rights issues. As biological products enter the realm of patented goods in western societies, products of traditional management systems, and species of traditional uses may deserve similar consideration.[85] Berkes lists three avenues of effective engagement with IK, ways that promote political empowerment and reduce prejudice: community-based and sponsored IK studies, development of indigenous scholarship, and recording and archiving IK without interpretation.[86] Indigenous groups have taken an active role in sharing their IK with western science:

> Alaska Native people have taken an active role in promoting the integration of traditional knowledge with western science traditions, though their reasons for sharing their knowledge with outsiders have been varied, as indicated by Richard Glenn, an Inupiaq who has served on the

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[81] Hunn et al., S80.
[82] See *United Nations Declaration on the Rights of Indigenous Peoples.* Internet; Available from http://www.un.org/esa/socdev/unpfii/en/drip.html, retrieved on February 22, 2010, and *Alaska Federation of Natives Guidelines for Research.* Alaska Native Knowledge Network (UAF). Internet; Available from http://ankn.uaf.edu/IKS/afnguide.html; retrieved on February 22, 2010.
[83] Berkes, 26.
[84] Ibid., 164.
[85] Ibid., 166.
[86] Ibid.,27.

> Arctic Research Consortium and the Alaska Native Science Commission: "Why do Iñupiat share traditional knowledge? Despite the stigma, our community is proud of a long history of productive, cooperative efforts with visiting researchers, hunters, travelers, scientists, map makers and others. We share when we consider others close enough to be part of Iñupiat culture and share when it is in the best interest of a greater cultural struggle."[87]

The Mackenzie Valley Pipeline Inquiry (1977), and Berger Commission Inquiry (1985) are some of the earliest, and most successful examples of participatory inquiry involving IK.[88] Canadian Justice Thomas R. Berger led both projects, pioneering a participatory design for inclusion of indigenous communities and their IK in the public space.[89] The first project, the Mackenzie Inquiry began when the Canadian Minister of Indian Affairs and Northern Development, appointed Berger to study the social, economic and environmental impacts of a gas pipeline across northern territories occupied by largely Inuit peoples. The Mackenzie Pipeline Inquiry was empowered "to recommend terms and conditions that ought to be imposed to protect the people of the North, their environment, and their economy."[90] Berger traversed the Mackenzie River Valley, and visited all affected communities during his three-year journey. He conducted community hearings, and heard hundreds of testimonies, creating a forum for locals in which they could develop and state their positions. His recommendation shocked the federal government, when he recommended a ten-year moratorium on pipeline construction until Native land claims are settled, and a permanent ban on a pipeline running south via Alaska and Yukon. The federal government suspended plans for what

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[87] Ray Barnhardt, and Oscar Kawagley. Indigenous Knowledge Systems and Alaska Native Ways of Knowing. *Anthropology and Education Quarterly*, (2005):36(1), 8-23. quoting Richard Glenn. Traditional Knowledge, Environmental Assessment, and the Clash of Two Cultures. In *Handbook for Culturally Responsive Science Curriculum.* (2000)S. Stephens, ed. 13-14. Fairbanks: Alaska Native Knowledge Network.

[88] See Thomas R. Berger. *Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry.* (Toronto: James Lorimer, 1977), and *Village Journey: The Report of the Alaska Native Review Commission.* (New York: Hill and Wang, 1985).

[89] Fischer, 232.

[90] Berger (1977).

was to be, up until then, the biggest private construction in history. Canada Native leaders were satisfied with the Inquiry, and praised Berger's efforts. "George Manuel, president of the Union of British Columbia Indian Chiefs, says the report is what his people have been demanding for years — a true recognition of native problems and goals. He calls it "a charter of Indian rights, the best statement on native rights since the Europeans came to Canada."[91] The Mackenzie Valley Pipeline Inquiry is still an unprecedented example of participatory inquiry, and IK inclusion in national-level environmental policy making.

Berger was again commissioned for a similar task by the Alaska Native Review Commission, to study the impacts of the Alaska Native Claims Settlement Act (1971) on Alaska Native communities. As he had done before, Berger and his assistants visited over sixty rural fishing villages and camps in an attempt to offer every Alaska Native the opportunity to participate personally in the inquiry.[92] Berger heard testimony from thousands of residents, and ultimately recommended the dismantling of ANCSA regional corporations, and the retribalization of Native corporation land at the village level. Although the Berger Commission's recommendations did not win the kind of federal recognition seen in the Mackenzie pipeline case, the forum it created to give voice to IK has been an invaluable contribution to the cause of Alaska Native self-determination. The legacy of Berger's work continues even today, and his model is still considered the grandfather of a publicly oriented model for participatory inquiry.[93]

The case studies presented in this research demonstrate some of the existing inclusion schemes for IK in Alaska's oil resource management. Policymakers are confronted with social and political issues stemming from the divisions between community and state-level interests, as well as from conflicting cultural rationalities as stakeholders relate differently to resource and knowledge definitions.[94] According to Beck, such conditions are necessary for subpolitical groups to emerge in RS.

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[91] Canadian Broadcasting Corporation, "Jubilant Natives Praise Berger's Report," available from http://archives.cbc.ca/politics/rights_freedoms/topics/295/# ; Internet; retrieved on February 22, 2010.
[92] Fischer, 232.
[93] Ibid., 231.
[94] Berkes, 166.

2.3 Risk Society

As the national debate over energy needs continues, offshore oil drilling in Alaska has been receiving increased attention for both its economic potential, and the hazards it may pose to the sustainability of Arctic environments. Definitions for, measurements of, and perceptions of risk diverge among stakeholder groups. Risk research can be conducted from a sociological perspective, by investigating the cultural formations of risk ideologies and their impacts on social change, or from a psychological perspective, by exposing people's common-sense approaches to the estimation of probabilities; that is how they visualize and process information relating to hazards.[95] The term 'risk' is often used interchangeably with seemingly similar terms, but not without consequences:

> In the contexts of sociology, a great deal of attention has been directed toward the variety of ways in which people are inclined to codify 'danger' as 'risk' in order to cast a negative *moral* judgment upon (...) the trustworthiness of expert opinion. Accordingly, by noting the widespread –and relatively recent – adoption of 'risk' as a popular pseudonym for 'potential hazard' or 'impending catastrophe', sociologists understand themselves to be witness to a transformation in cultural outlooks that lead some sections of society to display an aggravated hostility towards the progressive claims of modern, state-sponsored science.[96]

The point at which risk is identifiable to stakeholders and it begins to exist as risk consciousness greatly varies based on social conditioning, and the cultural processes which shape personal perception. For this reason, the ongoing collective, cultural and moralizing risk dialogue between social institutions and individuals about effective risk management must begin "by questioning the social boundaries of belonging across which cultural dialogues about risk take place", because risk judgment is a reflection of "social identifications, moral practices and commitments of *trust*."[97] The debate over whether

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[95] Iain Wilkinson, Psychology and Risk. In *Beyond the Risk Society: Critical Reflections on Risk and Human Security,* ed. Gabe Mythen and Sandra Walklate, 25-42. (Maidenhead: Open University Press, 2006), 28.
[96] Ibid.
[97] Wilkinson, 34.

risk is real or not is often framed by the subtleties of definitions, such as 'perceived risk' versus 'identifiable risk'. Issues with elements of scientific uncertainty often lead to political debates about the economic cost of precautionary regulation, which in turn require political priority setting; and so science and politics are fundamentally entwined with one another. Environmental politics can, and often do become hostage in a battle of expertise and counter expertise in the absence of certainty. When scientific findings lack proof of absolute certainty, the ensuing disagreement among experts can weaken environmental regulation: should an expert interpret data counter to what the existing regulation is based upon, producers of risk such as industrial stakeholders, may demand fewer regulations citing scientific uncertainties. Similarly, in the absence of absolute proof of safety, citizens who become the potential consumers of produced risks may demand tighter regulations on industry. Ultimately, even with the help of science, decision-making is reduced to value-laden judgment calls through processes that will always be vulnerable to political pressures. The purpose of this section, however is not to engage in an in-depth analysis of risk research in general. This section provides a glimpse into what risk means in the specific context of the RS thesis -a complex social theory of modern society-, with emphasis on its implications on knowledge production. Following this introduction to RS theory, *Section 2.3.3* provides a critical examination of areas of weakness in RS theory, as noted by critics of Beck's work.

In his RS thesis, Beck studies post-modern society and the existing institutional risk production and denial. Beck posits that the way in which we experience omnipresent risks to health and environment today constitutes a distinctive form of society, a globalizing shift from industrial modernity towards something new. According to Beck, risk society is not a choice to be made through political debate; rather it is an unintended consequence of "automatic operations of autonomous modernization processes, which are blind and deaf to consequences and dangers."[98] The notion of risk therefore is central in Beck's risk society thesis. At its focus are rapid, globalizing changes that constantly reform social, economic and political institutions, which have been intertwined with an

[98] Ulrich Beck, Risk Society and the Provident State. In *Risk, Environment, and Modernity: Towards a New Ecology*, ed. Scott Lash et al., 27-43.(London: Sage Publications Inc., 1996), 28.

omnipresent phenomenon of risk. As research produces answers, it also generates complex questions, and reveals new hazards, enhancing insecurities in the social climate.[99] The rapid expansion of institutionalized knowledge -public institutions that generate scientific knowledge- has created expert systems of risk calculation, assessment, and management, while failing to determine the meaning and extent of various risks.[100] This lack of consensus among experts has elevated the climate of uncertainty to new heights; one in which negotiating changes and assessing the impacts of hazards is increasingly difficult.

This changing structure of risk is at the focus of Ulrich Beck's risk society theory. Beck differentiates between natural hazards and 'manufactured risks', proposing that manufactured risks are decision-contingent, and arise as the side effects of the developmental processes of modernization.[101] Beck argues that these new risks are very different from natural hazards, as they are potentially more catastrophic yet not restricted temporally and spatially as natural hazards often are. The inequality of risk distribution is also changing, according to Beck, who argues that new mega-hazards of modernity threaten individuals regardless of status quo, or geographic location.[102] Therefore, in RS the allocation of modern risks can no longer be modeled along socio-demographic and geospatial lines. Global-scale decisions result in local consequences- such as nuclear power or global warming-, while local activities may impact distant locations -such as pollution.[103]

As public interest rises with regards to environmental issues, with it the pressure increases on the state to take action, and environmental risks become a political issue. The political discourse on manufactured risk-issues has manifest a risk regulation system based on expert knowledge. Although the regulatory tendencies of these expert systems are not static (e.g. from 1960s-1970s the US emerged as the pioneer of consumer and environmental protection, and employed precautionary regulatory policies), there has

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[99] Mythen (2004), 3.
[100] Ibid., 2.
[101] Ibid., 16.
[102] Beck (1992), 36-37.
[103] Mythen (2004), 5.

been an overall simultaneous scientification of politics, and politicization of science. Political discourse engages in scientific debates of expertise and counterexpertise, with the ultimate goal of decision-making. At the same time, the scientific community is not autonomous of politics, because science is a human endeavor and as such, cannot escape partiality.

The technical nature of modern risks has caused environmental decision-making to be embedded in technocratic practices. For example, expert language and processes of impact-assessments, cost-benefit analyses dominate the debate among industry-oriented experts and environmental counter-experts.[104] Fischer provides the following description of such 'environmentalism.'

> To adequately appreciate this connection between environment, science, and technology, one need only observe the science-based nature of environmental policy making (...). Scientific and technological determinations have become the primary standards by which substantive regulatory decisions affecting environmental quality are reached.[105]

In this process, the human factor is often lost as the divide between experts and citizens widens, and risk-relevant policymaking is distanced from laypersons. As local knowledge loses validity within the administrative devices of government, laypeople are underrepresented in expert risk-decision making systems. This idea, central to his RS theory also applies directly to this study of Alaska's oil resource management because Alaskan stakeholders vary in their consciousness of risks. Opposing viewpoints and perceptions of risks are often at the center of conflict regarding oil development, as evidenced by frequent legal battles surrounding offshore drilling.

2.3.1 Citizens, experts and risk

The technocratic nature of environmental policymaking has serious consequences to the expert-citizen relationship. Stakeholders' risk rationalities vary greatly, making the distinction between 'real' risk and 'perceived' risk impossible. Beck indicts the

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[104] Fischer, 94.
[105] Ibid., 91.

monopoly expert systems of risk calculations have on rationality. He argues that science 'determines' risks and the public 'perceives' risks. "Deviations from this pattern indicate the extent of 'irrationality' and 'hostility to technology'."[106] He adds that such technological elitism mistakenly views the public as well intentioned yet ignorant would-be engineers, who would be at ease with expert decisions if only they were well informed. This is a fallacy, says Beck "for statements on risk contain statements of the type *that is how we want to live* –statements, that is, to which the natural and engineering sciences *alone* can provide answers only by overstepping the bounds of their disciplines."[107] Beck's analysis of scientific risk calculation underscores the notion that science isn't a purely objective realm, nor should it pretend to be when it delves into the uncertain.

In the RS thesis, Beck features the concept of 'reflexive modernization', which refers to processes of unintended consequences. "Risk may be defined as a systemic way of dealing with hazards and insecurities induced and introduced by modernization itself."[108] The idea of risk society does not suggest a world that is more hazardous than previous eras, rather it implies a society increasingly preoccupied with, and organized in response to, risks that threaten its future safety.[109] The risk society is Beck's interpretation of risk as a new, intellectual and political concept responsible for the steady crisis of modernity.[110] This crisis consists of a paradox in which the processes of modernization are tasked with mediating risks, which they are responsible for causing in the first place. The institutions charged with minimizing these risks to health and environment are paralyzed by the nature and magnitude of risks, such as particulate air pollution.

A major feature of Beck's thesis is that the hazards of modernity escape perception, and hide behind physical and chemical formulas.[111] We can no longer see,

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[106] Beck (1992), 57.
[107] Ibid., 58.
[108] Beck (1992), 21.
[109] Mythen (2004), 140, quoting Anthony Giddens, Risk Society: The Context of British Politics. In *The Politics of Risk Society,* ed. J. Franklin, 23-34. (Cambridge: Polity Press, 1998), 27.
[110] Beck (1992), 3.
[111] Ibid., 21.

taste, or smell danger; it has to be broken down and explained to us by experts. Nuclear threat, or chemicals in foodstuff are modern, invisible, and highly technocratic threats. Furthermore, the consequences of modern hazards have a new global, and catastrophic quality. Risk management becomes an obsolete idea as manufactured risks are beyond the reach of protective institutions.

> The entry into risk society occurs at the moment when the hazards, which are now decided and consequently produced by society *undermine and/or cancel the established safety systems of the provident state's existing risk calculation.* In contrast to early industrial risks, nuclear, chemical, ecological and genetic engineering risks (a) can be limited in terms of neither time nor place, (b) are not accountable according to the established rules of causality, blame and liability, and (c) cannot be compensated or insured against. Or, to express it by reference to a single example: the injured of Chernobyl are today, years after the catastrophe, not even all *born yet.*[112]

Modern threats do not break down along traditional patterns of risk distribution, such as time, space, class structure, or nationality. "In the risk society the unknown and unintended consequences come to be a dominant force in history and society."[113] Indeed, managing and averting potentially catastrophic consequences may reorganize power and authority, as catastrophes gain political potential.[114]

What does this all mean to society and the risks we face today? Beck contends that this model has implications for risk identification, definition, and the relationship between experts and laypersons. Science has been the organizing mode of inquiry in industrial societies. The dominant direction of risk information flows from expert to layperson, since modern risks are often invisible, and technocratic.[115] Beck notes the imbalances of such communicative powers, and posits that in a RS, competing values of

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[112]Beck (1992), 31.
[113] Ibid., 22.
[114] Ibid., 24.
[115] Mythen (2004), 56.

'scientific' and 'social' rationalities blur institutional boundaries.[116] Scientific rationality refers to dominant devices of science and technology utilized by expert systems, while social rationality refers to cultural evaluations based on everyday experiences.[117] Yet Beck points out, that despite talking past one another, and breaking apart, the two sides remain interwoven and interdependent.[118] While science relies on certain social expectations and value judgments, social discussions of risk also depend on scientific arguments. Jasanoff supports this idea:

> There are in any functioning society shared understandings about what credible claims should look like and how they ought to be articulated, represented, and defended (...) Public reasoning, then, achieves its standing by meeting entrenched cultural expectations about how knowledge should be made authoritative. Science, no less than politics, must conform to these established ways of public knowing in order to gain broad-based support- especially when science helps underwrite significant collective choices.[119]

The inability of existing institutions to contain contemporary risks results in what Beck calls 'organized irresponsibility'; a system that is at once forced to recognize catastrophic risks, and to dismiss public concerns.[120] Organized irresponsibility describes the process of *symbolic detoxification*, the institutional denial of risks through the notion of 'acceptable levels'. Beck posits that through such cosmetic makeover of poisoning, risks gain a normative meaning, as non-poisoning is rejected as *utopian.*[121] Beck concludes that the production of toxins disappears behind these 'acceptable' values, and poisoning becomes harmless. Through technocratic rationalizations of ecological issues, existing bureaucratic structures seek to retain legitimacy; however, public dissent and environmental subpolitics intensify as scientific rationality and social rationality clash.

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[116] Mythen (2004), 57.
[117] Ibid., 56.
[118] Beck (1992), 30.
[119] Jasanoff (2005), 249.
[120] Mythen (2004), 60.
[121] Beck (1992), 65.

2.3.2 The subpolitics of knowledge

Sub*(system)*politics means shaping society from below.[122] "It is distinguished from 'politics' first, in that, agents *outside* the political or corporatist system are allowed to appear on the stage of social design (...), and second, in that not only social and collective agents but individuals as well compete with the latter and each other for the emerging shaping power of the political."[123] Subpolitics is a progressive form of public involvement through self-coordination and direct action.[124] Environmental NGOs, citizen initiatives, and social movements are but a few examples of subpolitical entities, and these have been gaining political influence in national and global politics. Subpolitics in the RS is a revolutionizing political force, and most importantly, it evolves outside of the main devices of political systems. Beck asserts that the democratic processes rooted in industrial-modernity go on simultaneously, continuing the power struggle between parties for political leverage, economic growth, and social security. However, subpolitics forces new conflicts, and new coalitions between institutions, interest groups, and the public and social systems become "malleable" as a result. [125] This process happens as subpolitical groups, or "alternative lines of action" become successful, profitable, and divide the power bloc of business.[126]

Much of Beck's subpolitical theory lies within the realm of knowledge production, because the core principle of the RS is knowledge. As knowledge production is a political issue in environmental debates, subpolitics of science can change the rules of political analysis, to open it to new linkages, and negotiations.[127] As the authority of technocratic science is challenged in RS on the basis of social rationality, the evolution of science gives way to a new, *reflexive* scientization. This form of science is more

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[122] Ulrich Beck, The Reinvention of Politics. In *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*, ed. Beck et al., 1-55. (Stanford: Stanford University Press, 1994), 23.
[123] Ibid., 22.
[124] Mythen (2004), 160.
[125] Beck (1999), 92.
[126] Ibid., 92.
[127] Beck (1999), 40.

complete, since it extends scientific skepticism to its own truths and consequences.[128] As a result, technocratic science loses its monopoly over knowledge claims, and definitions of truth gain social importance and relevance.[129] This does not mean that expert science becomes irrelevant. In fact, science becomes even more pertinent to the public, as citizens become 'active coproducers' of knowledge.[130] This paradox does not escape Beck, who notes "with reflexive modernization, public risk consciousness and risk conflicts will lead to *forms of scientization of the protest against science* (...) In short, (...) science forces itself to run its own gauntlet", and as such, science opens new fields of activity and application for *itself.* [131] Many environmental cooperative agreements, in which federal, state, and local governments collaborate, increasingly combine local knowledge and research-based science in decision-making and policy legitimation, as is evidenced in the case studies chosen for this thesis. Subpolitics is a challenge to the status quo of knowledge-producing institutions, a call for the realigning of interests into new arrangements in which stakeholders would mutually benefit from knowledge co-production.

2.3.3 A critical look at the risk society thesis

Beck's risk society thesis offers helpful insights into the sociopolitical structures of environmental policy making. His work represents an "important contribution to a critical understanding of science and expertise in environmental policymaking", and has proven to be a thought-provoking thesis providing the basis for much academic discussion about science and citizens.[132] Reception of Beck's thesis hasn't been without criticism however. This brief overview is intended as an informative guide to areas of weakness and limitation in RS theory as noted by some of Beck's peers. Due to the avalanche of discussion that has emerged on RS and the complex social theories outlined

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[128] Beck (1992), 155.
[129] Ibid., 156.
[130] Ibid., 157.
[131] Ibid., 161.
[132] Fischer, 48.

in the thesis itself, this assessment features a thematically selective list of criticisms focusing on the relations of risk, risk management and knowledge.

Hood et al. map differences in risk regulatory regimes and trace institutional dynamics in contemporary risk regulation, and question the very existence of a single 'risk' society. The authors conclude that contemporary risk regulatory regimes are very different, and even within a single country, uniformity in regulating risks does not exits.[133] Going further, the authors note that the regulatory differences are so great, that looking at a historical 'big picture' of regulatory tendencies, as is done in RS literature, is not possible without losing too much regime context and content, and assuming a tone which is too generalist.[134] They disagree with Beck's assessment regarding regime content (risk regulation practices) being a mere factor of regime context (natural hazards vs. manufactured risks), and propose that a methodologically conservative approach needs to be implemented to provide a systematic comparative description of risk regulatory regimes, lest we end up with mere impressionistic explanations.[135] Hood et al. however do not discount the tenets of RS entirely, and conclude: "We began this book by arguing that 'risk society' was the wrong place to start in seeking to account for variety in risk regulation regimes, but a dimensional analysis linking regime context to regime content can help us to put 'risk society' in its place using fairly conventional analytic tools."[136] Merging these angles produces a more precise depiction of those elements of a regime which can be dominated by technocrats and professionals, and those which cannot, and help sort out contextual conditions of RS from conventional forms of interest-group activity and capitalist democracy.[137]

Mythen finds Beck's thesis clumsy for implying that pressure groups are some sort of arbiters of environmental truth, and that subpolitical knowledge about risk is superior to information passed on by state institutions.[138] In this sense, Mythen

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[133] Christopher Hood et al., *The Government of Risk: Understanding Risk Regulation Regimes.* (Oxford: Oxford University Press, 2001), 58.
[134] Ibid.
[135] Ibid.
[136] Ibid., 144.
[137] Ibid.
[138] Mythen (2004), 48.

represents critics of Beck who ask whether Beck is misguided in believing "that truth about environmental risk belongs to certain organisations, and not to others."[139] However, Beck's enthusiasm towards subpolitical truths doesn't stem from a doctrinal belief in its infallibility. Rather, his RS theories serve to emphasize the importance of identifying the social components, which direct and organize science and technology. We must confront the powers delegated to expert decision making processes the moment we acknowledge that the ideal of the neutral expert, who is able to calculate unambiguously correct answers, is a myth. Therefore, Beck's strong convictions towards subpolitical knowledge is a call for the rethinking of the relationship between experts and citizens, in order to align scientific achievements with the objectives of the society. DeSario and Langton support this view by noting: "Science is most effective in achieving objectives, not in defining them."[140]

Other critics have pointed to the largely negative overtone of 'risk' as a hazard under 'grand theories of risk', and the absence of its role as a positive, innovative driving force in modernity.[141] Kemshall encourages the inclusion of positively framed risk definitions and productive risk taking in the context of social policies and welfare, as a way of promoting individual autonomy.[142] The discussion surrounding constructive risk taking confronts "how much security the state should afford the citizen, and the appropriate balance between risk and security."[143] Mythen and Walklate also hint at this dilemma,

> By cherry picking the fruits of the risk society, governmentality and cultural/symbolic approaches we can gain a decent vantage point on the current socio-cultural context and how this itself shapes and conditions responses to risk. The rudimentary question remains, however, about what exactly people are doing with all of this. As Bauman (2000)

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[139] Ibid., 49.
[140] DeSario and Langton, 10.
[141] Hazel Kemshall, Social Policy and Risk. In *Beyond the Risk Society: Critical Reflectionson Risk and Human Security,* ed. Gabe Mythen and Sandra Walklate, 60-74. (Maidenhead: Open University Press, 2006), 66-67.
[142] Ibid.
[143] Ibid.

> ponders, how do we seek biographical solutions to what are clearly systemic problems? (...) Is there a conceptual apparatus that might enable us to transcend the age-old problem of connecting individual risk assessments with embedded structural conditions?[144]

Mythen observes, "One person's risk may constitute another person's pleasure."[145] Mythen underscores the point that human beings are not inherently risk-averse, and questions the value of a society that would seek to completely disconnect itself from danger.[146] Beck seems hooked on an analysis of negative risks, or lose-lose situations, ignoring positive risks, which may facilitate social progress.[147] One missing link in Beck's social analysis may be the role of individual responsibility, as the focus is laid heavily on institutional culpability. How do citizens as consumers influence the production of manufactured risks through choices? How might citizens improve RS conditions through facilitating better legislation? Yet another limitation of RS is in the bipolar categorization of risk, as Beck greatly generalizes when he draws the line between natural hazards, and the manufactured risks of modernity.[148] Mythen opposes this clustering of risks, as he believes this to be a crude division and insufficient narrative of variant dangers.

Be it Beck's description of the nature of risk, or his emphasis on institutional culpability, there has been mixed reaction to his RS thesis. However there has also been great support for the application of the RS thesis to grounded research, and empirical evidence supports the theory that there has been a relative rise in public risk consciousness, and in the perceptions that protective institutions are failing to controlling manufactured risks.[149] Mythen comes to Beck's defense and reminds critics that "progressive utopian demands are not always consonant with the rigorous requirements

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[144] Gabe Mythen and Sandra Walklate. *Beyond the Risk Society: Critical Reflections on Risk and Human Security.* (Maidenhead: Open University Press, 2006), 235.
[145] Mythen (2004), 182.
[146] Ibid.
[147] Ibid., 181.
[148] Ibid., 180.
[149] Mythen (2004), 182.

of academic theory building."[150] He warns that despite the lack of empirical evidence in RS theory, Beck's failure to provide hard data does not disprove his analyses of social trends. Mythen warns not to throw out the empirical baby along with the theoretical bathwater.[151] Mythen concurs with Bronner:

> For all its problems, the work of Ulrich Beck retains an electric quality. Idea after idea jumps off the pages of his work. Some lack precision, others never receive justification, and still others contradict one another. Qualifications sit on top of one another; arguments disappear only to appear once again; fuzzy slogans compete with the claims of common sense. But then come the golden nuggets of dazzling insight.[152]

Beck's work has been instrumental in forcing the risk debate onto the academic agenda, and it has been pivotal in the evolution of cross-discipline debate between sociology, cultural studies, environmental studies and political science.[153] Applying the RS framework to the politics of knowledge within Alaska's oil regime, we gain important insights into the social climate of risk regulation and ultimately uncover the missing linkages between scientific and social rationalities of risk. Most importantly, the purpose of this study is to contribute to the dialogue about the changing dynamics of knowledge and politics regarding environmental risk.

2.4 Discussion

With the increasing number of scientific issues requiring expert advice, environmental policymaking has become the realm of technocrats. The discoveries of science and technology have, in many areas, been beneficial to humankind, but the omnipotence of our technology has also empowered us to achieve radical alterations of society.[154] "If technology is viewed as instrumental, it is important to identify the social

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[150] Mythen (2004), 184.
[151] Ibid., 183.
[152] Mythen (2004), 183. Quoting S.E. Bronner, 1995. Ecology, Politics and Risk: The Social Theory of Ulrich Beck. *Capitalism, Nature, Socialism: A Journal of Socialist Ecology,* 6 (1), 67-86.
[153] Mythen (2004), 6.
[154] DeSario and Langton, 4.

mechanisms and values which direct and organize this knowledge."[155] *Chapter 2* presented an overview of the interactions of politics and science, focusing on the relationship between experts and citizens in the context of modern risks. The risks of modernity depend on decisions, because they exist as the by-products of modernization, and the increasing energy needs brought about by its processes. Given the highly technical and invisible nature of these risks, the politics of risk has emerged as the politics of knowledge.[156] The assessment and mediation of risks requires the intervention of experts, leaving little room for public engagement with expert risk regimes. Furthermore, the extent and nature of modern risks have spatial and temporal consequences beyond the reach of protective institutions. For Beck, this is the central fault line of RS and reflexive modernization.[157] This imbalance between the complexity of existing risks and their regulation has reached a crucial point, beyond which technocracy and democracy have emerged as the chief protagonists in the uses of scientific knowledge.[158] An active, engaged democracy is key in closing the gap between those with, and those without knowledge, and in joining scientific and cultural rationalities in policies.

One of the mechanisms that allow citizens to participate in the democratization of science decisions is the utilizing of institutionally established avenues for inclusion. Such opening of technocratic administrative structures to non-expert input does not stand in contradiction to the tenets of RS. Beck suggests that the processes of modernization not only alter technology and risk definitions, but simultaneously, a *political* modernization of RS "disempowers and unbinds politics and politicizes society" in developed societies of the West.[159] In other words, the checks built into democratic societies to limit the extent of centralized political powers constantly progress to fulfill

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[155] DeSario and Langton, 4.
[156] Fischer, 51.
[157] Ibid.
[158] DeSario and Langton., 5.
[159] Beck (1992), 194.

civil and constitutional rights. In the end, "the modernization process furnishes the gradually emerging centers and fields of action it makes possible for subpolitics."[160]

The political modernization of Western democracies facilitates the progression of citizen-initiated knowledge, and makes possible the demonopolization of scientific rationality over truth definitions. In addition to using established routes of inclusion, citizens may also organize outside the public sphere in order to promote their truth definitions, and to gain inclusion in the public structuring of knowledge. The first case study is a great example of subpolitical push towards IK inclusion, and establishes the presence and importance of RS in Alaska. The history of the Alaska Native Science Commission highlights the importance of cultural rationalities to risk definitions in RS.

[160] Beck (1992), 194.

Chapter 3

The Pursuit of Knowledge in Alaska's Risk Society: A Case Study

3.1 Introduction

The first case study traces the linkages between the origin of the Alaska Native Science Commission and Beck's risk society thesis. This study establishes the presence of a RS in Alaska, and demonstrates that a RS in the Alaskan context exhibits distinctive features. Alaska-specific issues, such as IK, susbsitence, and Arctic contamination mold the relationship between expert and citizen, and set the stage for subpolitics to shape knowledge production. The Alaska Native stakeholders in this case fit Beck's profile of reluctant consumers of risks: Arctic contaminants are an incidental problem of modernization, in undesirable abundance, and they must be eliminated, or denied or reinterpreted.[161] Locals tend to interpret risks differently from experts, and they may constitute (at least from a cultural rationality perspective), a better system to judge hazards. This ideology is at the heart of the subpolitical model. The following Alaskan example illustrates the social changes that may take place as risk consciousness rises and propels local perspectives onto a global scene.

3.2 Case study: The genesis of the Alaska Native Science Commission

In order to fully understand the significance of the Alaska Native Science Commission (ANCS) in the context of the risk society, we must identify common variables in the history of the Commission, and Beck's thesis. It is important to examine the circumstances that prompted the establishment of the ANSC, and to look for similarities between ANSC's mission and Beck's notion of citizen initiated knowledge production, or the subpolitics of knowledge. The methodology employed to accomplish this task divides the case study into three sections. *Section 3.2.1* examines the production and nature of risks through the lens of RS. *Section 3.2.2* offers a scrutiny of the interaction between experts and citizens, and the role of scientific and cultural rationalities in the specific context of the case. Finally, *Section 3.2.3* probes whether the

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[161] Beck (1992), 26.

ANSC is a sign of Beck's subpolitics. This final analysis investigates what shape subpolitics has taken in the pursuit of IK inclusion and risk mediation in the case of the ANSC.

3.2.1 The changing pillars of risk: Arctic hazards and the Workshop on Arctic Contamination

The Workshop on Arctic Contamination (WAC), held May 2-7, 1993 in Anchorage, Alaska was convened by the Interagency Arctic Research Policy Committee (IARPC), composed of senior officials from fourteen federal agencies that conduct and manage scientific activities in the Arctic, and also drew international attention, as participants from Norway, Russia, Canada, and organizations such as the International Permafrost Association, and World Wildlife Fund attended along numerous US federal agencies, and academic institutions. Concerns on the agenda included the atmospheric and oceanic circulation of pollutants, human health, the health of terrestrial and marine biota, and risk assessment and data management requirements for arctic contamination. Mandated by the Arctic Research and Policy Act of 1984 (ARPA), the IARPC's mission has been to coordinate the planning and management of Arctic research. The purpose of the workshop itself was the collection of factual (i.e. *objective*) information for US government decision-makers, in support of US policy on Arctic contamination, and to assess "whether specific Arctic contaminants present a risk to the environment, ecosystems, or human health."[162] What are Arctic contaminants, and how do they compare with Beck's risk definitions?

Arctic contaminants are a result of industrial processes. Contamination can occur as a byproduct of local activities (e.g. natural resource development, transportation, heating homes), but the cumulative effects of nonpoint source pollution in the Arctic is of increasing concern. Nonpoint source pollution is a process in which pollutants are transported north, long distances, via air and water currents. Heavy metals and Persistent Organic Pollutants (POPs) are especially prevalent in Arctic systems. POPs are chemical

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[162] Interagency Arctic Research Policy Committee (IARPC). *Workshop on Arcitc Contamination Bibliography.* 1993.

compounds that are resistant to environmental degradation, and bioaccumulate in living tissue (accumulating over time, and especially in fat tissue) through the food web. Prey animals therefore are particularly susceptible to accumulating these contaminants, and levels of POPs tend to increase the higher one moves up the food chain.[163] Examples of POPs include pesticides, insecticides, industrial chemicals, PCBs (polychlorinated biphenyls) and byproducts of combustion processes.[164] Human intake of POPs through contaminated food and water supplies is of great concern to residents of Arctic communities. Fish and marine mammals are important diet staples in many coastal communities. Foods loaded with fat such as seal and whale blubber, otherwise valued for their dense caloric concentration and cultural significance, accumulate high concentrations of contaminants. Incidentally, high fish consumption has been tied with high levels of POP contamination in Arctic residents: a 1987 study conducted by Laval University (Quebec, Canada) found that Inuit women of Northern Quebec had some of the highest concentrations of PCBs in breast milk in the world.[165]

The extent of radioactive waste pollution in soils and waters and the legacy of Project Chariot[166] were recurring themes at the WAC workshop. Guest speaker, Native Elder and executive director of the Arctic Marine Resources Commission, Caleb Pungowiyi voiced Alaska Natives' concerns on Arctic contamination. Pungowiyi's presentation revealed that Alaska Native concerns over POPs, heavy metals, radioactive waste, and oil spills were overwhelming, and people feared the effects of pollution on human health, and their subsistence way of life.

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[163] Norwegian Polar Institute, *Contaminants.* Available from: http://npweb.npolar.no/english/subjects/Miljogifter ; Internet; retrieved on February 24, 2010.

[164] Ibid.

[165] *New York Times,* "High Levels of PCBs Found in Eskimo Breast Milk," 7 February 1989 [newspaper on-line]; available from http://www.nytimes.com/1989/02/07/science/high-pcb-levels-found-in-eskimo-breast-milk.html?pagewanted=1 ; Internet; Retrieved on February 24, 2010.

[166] Project Chariot (1958) proposed by the U.S. Atomic Energy Commission, was a nuclear excavation project. It called for the detonation of 5 nuclear devices approx.30 miles from the Inupiat village of Point Hope, in order to create an artificial harbor at Cape Thompson in the Chukchi Sea. Although the plan was never realized, radioactive materials were released to test their effects on tundra systems. The U.S. Department of Energy conducted remedial action in 1993 to remove contaminated soil. (source: U.S. Department of Energy. *Project Chariot.* Available from: http://www.lm.doe.gov/Chariot/Documents.aspx; Internet; retrieved on February 24, 2010.)

The workshop revealed that the vast majority of Arctic contaminants are the result of manufactured risks: trace metals occur naturally in water, sediments, and organisms, yet the most significant pollutants, both in quantity and quality are results of industrial and agricultural activities.[167] These activities have caused POPs to persist in the environment, resistant to environmental degradation, and readily transported through particulate matter and the food chain to faraway places where they've never even been used. Radionuclide contaminations from Cold War era experiments (such as Project Chariot), as well as radioactive waste dispersed through oceanic circulation from Russian sites have polluted Alaska's soil, waters, and wildlife.[168] These risks are often invisible, highly technical, and pose unpredictable environmental hazards. Beck's 'pillars of risk' (the relationship between risk, time and space, and the inadequacies of protective institutions) resonate well with the Workshop's agenda: first, unlike most natural hazards -such as floods and earthquakes, Arctic contaminants are restricted by neither time, nor space. Decades old nuclear activities still threaten Arctic environments; while POPs and radioactive pollutants from far away have reached the Arctic. Additionally, current institutional devices responsible for risk management are inadequate to control these risks, due to both the quantity of risks and the often-uncertain human and environmental cost. Patterns of risk production for arctic pollutants, as well as the nature of risks imposed upon Arctic systems support the arrival of modern risks in Alaska. With the arrival of modern risks come new challenges for expert systems of risk calculus, and for society as a whole. These new challenges often merge the political and the scientific spheres: evidence is mounting that new terms for public engagement need to define flexible relationships between experts, citizens and science in order to resolve the highly complex problems of RS and preserve an active democracy.

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[167] IARPC (1993).
[168] IARPC (1993).

3.2.2 Citizens, experts and inclusion: Diverging risk rationalities at the Workshop on Arctic Contamination

Based on the agenda of the workshop, Alaska Native participation was minimal, as the vast majority of speakers represented scientific organizations, and federal agencies. Pungowiyi stated that his people felt the US government has been slow in recognizing the importance of Arctic research, focusing too much on endeavors in Antarctica, and research supporting economic development. In a revealing statement, Pungowiyi voiced the skepticism of many towards scientific research: "Much information gap exists concerning scientific knowledge of the Arctic."[169] Alaska Native representatives were also weary of providing information and facilitating scientists, while getting what they felt was little, in return. They felt some clearinghouse of information was necessary in order to track changes, and distribute information well. As Pungowiyi remarked: "Most of the research is done during the summer months as the scientists come trooping to the north with their instruments and binoculars and see only what they wish or are requested to see."[170]

The Anchorage Daily News, in a May 7, 1993 article titled *Natives, Scientists Lack Trust, Alaska Leaders Ask Researchers to Listen* covered the conference. The characterization of the conference noted that, "the communication and trust between Alaska Natives and government scientists have deteriorated to the point that neither is benefiting from the other's knowledge. That is the message a handful of Native leaders brought to the Workshop."[171] The article lists concerns brought to the workshop by Alaska Natives. Many voiced their desire to participate in research and wished to be recognized as valuable participants in science. Similarly, Alaska Native participants sought recognition for being first observers of problems, given their close cultural and physical proximity to the locale. The overall tone of these sessions echoed the desire for

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[169] IARPC (1993).
[170] Ibid.
[171] Natalie Phillips, "Natives, Scientists Lack Trust, Alaska Leaders Ask Researchers to Listen," *Anchorage (Alaska) Daily News,* 7 May, 1993. B1

inclusion in research and decision-making, and concerns about possible links existing between cancer rates and pollution.[172]

As the WAC illustrates, such a systemic approach to risk assessment and management was bound to encounter the pitfalls of conflicting value systems: while officials and scientists gathered to discuss hard data for risk management and policy, Alaska Native representatives gathered to formulate solutions to issues crucial to cultural survival. Under RS conditions, the competing scientific rationality and social rationality clash. James specifically explores the meeting ground between science and Native American communities, and concludes that engineers and scientists are often socialized and trained to develop and apply scientific understanding and knowledge without consideration of "anything other than its scientific or technical accuracy."[173] Beck illustrates this limitation by the following example: a report issued by the German Council of Experts on Environmental Issues (Rat der Sachverständigen für Umweltfragen) makes the claim that "the exposure of the population to lead is not dangerous on average," and "only in the vicinity of industrial emitters are dangerous concentrations of lead sometimes found in children." Such analysis of pollutants *on average* fails to acknowledge socially unequal risk proportions and groups and living conditions "for which the levels of lead and the like that are 'on average harmless' constitute a *mortal danger*."[174]

Beck indicts the institutional methods of risk management on these grounds, for dehumanizing risk production: he argues that the human factor is missing from a risk management scheme purely concerned with formulas of natural science. When toxicity is defined in terms of 'acceptable levels', and declared safe via 'on average' measurements, it fails to acknowledge the social, cultural, and political risks of modernization. Furthermore, Beck is worried that discussions purely conducted through

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[172] Phillips (1993), B1.
[173] James, 48.
[174] Beck (1992), 25.

scientific terms include human beings only as organic materials, and consider nature *without* people, or matters of social and cultural significance.[175]

> What is astonishing about that is that the industrial pollution of the environment and the destruction of nature, with their multifarious effects on the health and social life of people, which only arise in highly developed societies, are characterized by a *loss of social thinking.* This loss becomes caricature –this absence seems to strike no one, not even sociologists themselves.[176]

As the WAC commenced, there were clear signs that communication and trust between scientists and Alaska Natives had deteriorated, and conflicting rationalities emerged. As the workshop concluded, Alaska Natives clearly felt the divide between their understanding of risks, and the official (scientific) rationale of risk.[177] The unexplained changes in human and wildlife health, scientific evidence of harmful contaminants, and a lack of an information clearinghouse of environmental issues constituted a cause for action: time has come to participate in and influence research. As Beck points out, laypersons do not routinely reject expert claims, rather they "engage with scientific information in diverse and sometimes contradictory ways."[178] "Risk consciousness of the afflicted (...) is usually both *critical* and *credulous* of science."[179]

3.2.3 The subpolitics of knowledge: The Alaska Native Science Commission and the Traditional Knowledge and Contaminants Project

Following the Workshop on Arctic Contamination, Alaska Natives felt strongly about getting involved in scientific research, and being aware of the science used to investigate their lives and environment. In October 1993 the Alaska Federation of Natives (AFN) passed a unanimous resolution to establish the Alaska Native Science

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[175] Beck (1992), 24.
[176] Ibid., 25.
[177] Alaska Native Science Commission. *History*. Available from http://www.nativescience.org/about/history.htm ; Internet; retrieved on February 25, 2010.
[178] Mythen (2004), 56.
[179] Beck (1992), 72.

Commission (ANSC) at their annual convention.[180] Realizing the opportunity for scientists to understand the public, and vice versa, the National Science Foundation (NSF) provided funding to assist in the foundation of the commission. Neal Lane, NSF Director (1993-1998) stated:

> Mutual respect opens the door for synergy between the scientific method and indigenous knowledge (...) NSF has taken the lead in formulating principles for the conduct of research in the Arctic (...) Researchers we support are directed to consult with local communities in planning their work and to respect local cultural traditions.[181]

The plans for such collaborative efforts in synthesizing local and academic knowledge envisioned joint workshops, meetings and the dissemination of data.[182] The first series of workshops in 1994 included community leaders, elders, scientists, and researchers in order to plan the structure and mission of the ANSC.[183] In March of 1997, the ANSC hosted the *Traditional Knowledge Systems in the Arctic* workshop, in order to begin the collaboration between scientific researchers and local residents.[184] This workshop was convened to outline definitions of knowledge-acquisition systems, to pinpoint the differences between Western scientific methods and TEK. Alaska Native elders, Arctic scientists and researchers, policymakers, various agency managers and educators were present. In June of 1997, the ANSC officially installed seven commissioners representing six Alaskan tribes, and published several project priorities on the agenda, including Social Transitions in the North, Contamination of Subsistence Foods Harvest, and Workshops on Traditional Knowledge Systems in the Arctic.[185] ANSC

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[180] Alaska Native Science Commission. *History*. Internet; Available from http://www.nativescience.org/about/history.htm , Accessed February 25, 2010.
[181] Neal Lane. Arctic Residents and researchers Exemplify Collaboration. *Witness the Arctic.* 1997, v5(2):12
[182] Arctic Research Consortium of the United States. Workshop Details Opportunities in Arctic Research. *Witness the Arctic: chronicles of the Arctic System Science Research Program,* 1998. v6(2):9.
[183] Alaska Native Science Commission. *Newsletter,* 2000. v1.
[184] Arctic Research Consortium of the United States. Traditional Knowledge Systems in the Arctic. *Witness the Arctic: chronicles of the Arctic System Science Research Program,* 1997. 5(1):11.
[185] Arctic Research Consortium of the United States. Alaska Native Science Commission Installs Seven. *Witness the Arctic: chronicles of the Arctic System Science Research Program,* 1998. 5(2):19.

commissioners are nominated by Alaska Native communities to serve on the Board, and include Native knowledge experts, educators, and scientists.

The ANSC has collaborated closely with the University of Alaska over the years. In the years since its formation, the ANSC has worked to integrate local and traditional knowledge into research and science, and to influence research priorities. Encouraging Alaska Natives to participate in science and research, and facilitating community feedback on results, the ANSC has focused on environmental health, causes of diseases specific to Alaska Natives (especially cancers), cultural survival, partnerships with agencies and researchers who have advanced Native community involvement in research, and active community involvement in science and research involving Native Alaskan communities. The ANSC coordinated the Traditional Knowledge and Contaminants Program (TKCP), a collaboration of traditional, and research-based knowledge, focusing especially on the contamination of native subsistence foods by radionuclides and POPs. Other projects have included a searchable, online database of traditional knowledge and native foods (again, as Beck observes, subpolitical groups do not reject, but make use of expert science and technologies), analysis of Native foods, workshops, meetings and publications on subsistence issues. Since 2002 the ANSC is an independent non-profit organization, continuing to provide the link between the scientific community and Alaska Native Communities.

The relationship between subpolitical organizations and expert science is not widely documented. Examining the goals and projects of the ANSC may shed some light on how citizen initiated knowledge production organizes science. Looking at the methodology and outcomes of the Traditional Knowledge and Contaminants Program (TKCP) can reveal what roles locals and experts have in a cooperative, inclusive knowledge production scheme. The TKCP was a collaborative pilot study between the University of Alaska's Institute of Social and Economic Research and the ANSC. It received funding from the Environmental Protection Agency (EPA) and the National Science Foundation (NSF). The goal of the TKCP was to "build capacity among Alaska federally recognized tribes to address their concerns about adverse changes in the

environment."[186] The TKCP was a participant-based research project, aimed to provide a clearinghouse of information for Native communities on the safety of subsistence foods, and the research available on contamination of Native foods. A Tribal Review Panel, in ten locations, selected the participants. The project began in spring 2003, after the ANSC had finalized agreements and budgets with the tribes. There were seven components to the project, designed to increase community ownership and trust of the study:[187]

(1) Develop a traditional knowledge base: Through seven regional meetings, Native elders, hunters, youth, and Alaska Native scientists were asked to share their concerns in a talking circle. The talking circles were guided by local concerns rather than a set of questions, in order to avoid prejudging the scope of the meetings. The most important goal of these circles was to *increase* trust, and local control among the Alaska Native communities.

2) Develop a science-knowledge base: This component was aimed at recording and databasing existing research-based knowledge about contaminants and climate change, compiling nutritional information about Native foods, and working with the Subsistence Division of the Alaska Department of Fish and Game to incorporate data and description of activities from Native food harvests. This collection of scientific knowledge focused on areas of concern to locals, such as contaminant effects on human health, wildlife health, and took into account the differences in perceptions of risk between experts and Alaska Native communities. The team hoped that the synthesis of traditional and science-based knowledge would result in a "consensus action agenda, and an integrated approach to helping tribes address their concerns about environmental change."[188]

3) Develop an integrated database: This step of the project was designed to make available both traditional knowledge and science-based knowledge about contaminants and subsistence foods, in the form of an online, computerized database.

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[186] University of Alaska Anchorage (UAA) Institute of Social and Economic Research. (ISER). *TKCP Final Report* (2004). Available from http://www.iser.uaa.alaska.edu/Publications/TKRadionuclides.pdf ; Internet; retrieved on February 25, 2010.
[187] UAA ISER (2004), 1.
[188] UAA ISER (2004), 56.

4) Develop a web-based resource guide for tribes wishing to act on their concerns: This component of the project provided tribes "on-demand" technical assistance with environmental concerns, and started a mini-grant program.

5) Design and implement a pilot program of mini-grants to tribes: The EPA had funded a mini-grant program, administered by the ANSC, in order to aid tribes in getting started in research. The mini-grant program was meant to complement other EPA grants, and was designed for ease of use.

6) Based on the mini-grant experience, recommend ways to support tribal actions: The mini-grant experiment served as a tool in making future recommendations for funding of tribal research activities, and the level of interaction with tribes.

7) Share the experience, and conclusions with Native communities, scientists, and agencies.

The TKCP pilot project was groundbreaking in its community-based, holistic approach. The ANSC and the University of Alaska Institute on Social and Economic Research prepared a final report on the TKCP project. The documentation of IK in the final product, a searchable database, contains verbatim input from Alaska Native participants, and includes information about changes in animals, plants and fish and their behaviors:

> Why are our people getting sick? A young kid came to my office. He had been looking for ivory across the east side of Kotzebue Sound. He found two mud sharks which still had meat. The sea gulls wouldn't eat them and you know sea gulls will eat anything (...) This summer we had no sockeye. The sockeye they were catching up the river in June, they had tumors, they were deformed. Some had only one eye, some had bumps.[189]

In their final report, the team compiled their recommendations for strategies to improve participant research in Alaskan Native communities. Based on the TKCP experience, the team made the following observations: the unique cultural and sociological aspects of each community involved presented unforeseen challenges, such as slowed

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[189] UAA ISER (2004), 9-12.

communication due to technological challenges, and delayed decision making due to conflicting schedules of members. Personnel turnovers, political changes, illness, and limited human resource pool for sampling also were factors in the success of the project.[190] The TKCP final report includes an extensive analysis of these challenges. The TKCP was an ambitious undertaking, resulting in a unique collaboration of agencies, communities and individuals. Its final product, a searchable Traditional Knowledge and Native Foods[191] database is a useful tool of empowerment against modern risks. Although the information contained in the database cannot ease the risk burden of local communities (especially so with regards to nonpoint source pollution), in the RS thesis knowledge equals power. As science becomes less and less sufficient for the "socially binding definition of truth", the new, public-oriented experts and alternate forms of knowledge can initiate a demonopolization of scientific knowledge claims.[192] The "equalization tendencies in the gradient of rationality between experts and laypeople" brings about a decline of the power of technocracy, and its usual parameters of power (modernity vs. tradition, experts vs. laypeople).[193] In such a climate, the complexity of risk decisions requires an approach in which scientific and social rationalities are resolved.

In RS, we have to redefine the definitions of wealth and progress in the context of risk, and make decisions about how we want to live. The TKCP project allowed Alaska Native communities to have ownership in the study, and proved that a holistic approach to risk assessment, through the collaboration of local and research-based knowledge, not only builds understanding, but also improves the quality of science used: community-level involvement enhances data collection, and it fills the social and cultural gaps in technocratic science.

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[190] UAA ISER(2004), 64.
[191] The database may be found at http://www.nativeknowledge.org/login.asp
[192] Beck (1992), 156.
[193] Beck (1992), 165,

3.3 Discussion

The conditions and circumstances for the Workshop on Arctic Contaminants of 1993, and the subsequent rise of the ANSC support the existence of the risk society in Alaskan politics. The birth of the ANSC exhibits telltale signs of the risk society: manufactured risks, and the pillars of risk -as discussed earlier. Beck connects politics and science through the dialogue over modern risks: "Risk has become an intellectual and political web across which thread many strands of discourse related to the slow crisis of modernity and industrial society."[194] The WAC merged intellectual and political discourses as scientists and political agencies assembled to advise public policy related to risks. Clearly, existing protective institutions, and the public have conflicting rationalities at times. Through reforming knowledge production, and community involvement, as we see through the life of the ANSC, stakeholders may seek alternate routes of political engagement. Subpolitics offers such direct route to political engagement for stakeholders. Beck notes that during the subpolitical discourse, as groups, and communities take on direct leadership roles in environmental politics, the hegemony of dominant institutions is penetrated by new types of conflicts and coalitions between and within institutions, parties, interest groups and the public.[195] The birth of the ANSC has indeed resulted in new collaborative efforts, and new coalitions in knowledge production.

As this historical overview of the ANSC suggests, environmental politics is malleable to alternative actions, and waves or reform. Naturally, subpolitics requires supporting norms and institutions within a democratic society, such as right to free speech, assembly, and a critical press. Dominant institutions may in fact be supporting of such direct participation. Beck describes this new political culture, as a reality in which "heterogenous centers of sub-politics have an effect on the process of politically forming and enforcing decisions, on the basis of utilized constitutional rights."[196] It seems that environmental subpolitics is one way to take ownership for the world we live in when RS

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[194] Beck (1992), 3.
[195] Beck (1999), 92.
[196] Beck (1992), 194.

conditions are present. There may not exist a single, perfect method for combating the risks of industrialization, but the inclusion of subpolitical groups may fill some of the gaps that exist in expert risk calculus. Groups such as the ANSC may not only bring to the table cultural definitions for risk, but can boost the scientific database of hard data on ecosystem changes. The genesis of the ANSC establishes the presence of RS in Alaska, and attests to the power of subpolitical groups to elevate their risk consciousness to the public space. The TKCP project highlights ways in which alternate knowledge and expert science can interact and mutually benefit, by providing a glimpse into RS in the Alaskan context: Alaska Native people and experts need to engage each other through science in order to combat the Arctic risks that threaten health and the traditional way of life.

As an added benefit, the published findings of such community-based research make available local risk experiences to global audiences. As local knowledge and experiences are shared among distant communities, groups with similar risk experiences and cultural backgrounds may learn from each other, and extrapolate information otherwise not available. Common observations and experiences of locals pooled from within a wider geographic radius could, perhaps, be helpful in combating the uncertainties surrounding the science of modern risks. For instance, the causality between contaminants and illness often remains uncertain and tentative. As Beck suggests: "presumptions of causality escape our perception (...) they must always be imagined, implied to be true, believed. In this sense too, risks are invisible."[197] Perhaps collaboration among communities can reduce the uncertainties, and increase the visibility of risks. For example, the Laval University study on contaminants in Northern Quebec Inuit women's breast milk and their exposure to PCBs (see *Section 3.2.1*) may be a valuable resource for a comparative study of PCB levels in Alaskan Inupiat subsistence foods and breast milk. Similarities and differences found in pollution trends may contribute to the overall understanding of Arctic risks and possible links to health effects. The benefits of shared knowledge motivated the founding of several pan-regional

[197] Beck (1992), 28.

subpolitical entities. The Inuit Circumpolar Council was established in 1977 to advocate for all Inuit and their IK, and it is dedicated to organizing the international Inuit community in response to "increasing attacks on the Inuit way of life, environment, and human rights that were initiated by industry, states, and others with interests in the Arctic."[198] These transnational actors are part of what Beck calls 'global subpolitics', a process of globalization from below, in which a world public appears, and organizes to challenge established political institutions.[199] As pollution and risks are globalized, they begin to shape and facilitate the creation of international organizations, both within and outside of nation-state politics.

Knowledge equals power in RS not only because it may change individual risk consumption patterns, but also because it can reorganize power and authority: averting and managing modern risks becomes a political issue due to the social, economic and political consequences of side effects, such as mammoth costs, legal proceedings and collapsing markets.[200] The next two case studies draw attention to the competing political, economic, and cultural imperatives that drive stakeholders to seek authority over risk decisions.

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[198] Inuit Circumpolar Council. *Activities and Initiatives.* Available from http://inuitcircumpolar.com/section.php?ID=12&Lang=En&Nav=Section ; Internet; retrieved on February 25, 2010.
[199] Beck (1999), 37.
[200] Beck (1992), 24.

Chapter 4

Indigenous Knowledge and Oil Resource Development in Alaska: Case Studies

4.1 Introduction

The first case study set forth some of the challenges in risk management posed by the processes of modernization. It also revealed one of the main dilemmas of RS: new types of risks have simultaneously global and local consequences. The Workshop on Arctic Contamination revealed that a significant portion of the contaminants found in Arctic environments are carried from faraway places, and are the result of long-distance irresponsibility, because manufactured risks are not restricted by the same spatial and temporal boundaries as natural hazards are. Thus the RS thesis suggests that, ultimately, there is no escape from the catastrophic potential of modern risks, and the widespread pollution from POPs underscores this proposal. However, the industrial processes that are responsible for modern risks also threaten communities near these risk production sites. Residents living in close proximity to point source pollution face increased hazards in many cases. The second and third case studies deal with such localized hazards. These risks, like the ones discussed in the first case study, also fall under the collective umbrella of manufactured risks. However, the focus is on decision-contingent, local risks resulting from local risk production processes, and the politics of risk decisions. This chapter examines Alaska's oil resource policies concerning environmental risk management, and the use of science within state administrative agencies in order to assess the role of oil policy development on the progression of RS in Alaska. In particular, these case studies investigate the role of IK in policy decisions, with regards to North Slope oil resources.

The chapter begins with a brief history of oil policy development in Alaska, and an overview of the public process at state departments today. The case studies follow the methodology outlined in *Chapter 1.2* and also employed in the first case study. Both cases are first assessed for their risk contents, followed by a narrative of the expert-citizen relations, and conclude with an examination of the subpolitical pushback.

4.2 Overview of Alaska's oil administration regime

Oil development in Alaska is administered through a multi-tiered management process, which includes federal oversight where applicable, state-federal cooperative arrangements, state governance, and local (borough, city) involvement. This chapter intends to uncover existing institutional arrangements, which provide a platform for public participation in this process. In order to provide an analysis of the flow of information from citizens to policymakers, this discussion demonstrates the broad spectrum of authorities involved in the process, but does not aim to give a comprehensive list of all laws and regulations applicable to oil operations. The purpose of this section is to re-examine the history of the politics of oil in Alaska in order to give a background for the development of RS to be discussed in two case studies in *Chapters 4.3* and *4.4.* Its focus lies more on the *relationships* between state, petroleum industry and citizens, and less on offering a comprehensive account of policy development, because this approach respects the qualifications necessary to analyze the progress of RS in Alaska, since the RS thesis is a scrutiny of relationships as opposed to end products. This section concludes by providing a map of the current public input process at state departments. The aim of this chapter therefore is to provide a glimpse into the evolution of interactions among stakeholders in Alaska over an extended period of time in order to lay the foundation for the arrival of RS in Alaska's oil management regime.

The Alaska Department of Natural Resources (DNR) is the primary agency charged with administering oil exploration and development on state lands. The commissioner is the chief executive officer in the department, in charge of establishing resource management policies (in accordance with state statutes and legislation), and of directing departmental resource management programs.[201] The Alaska Department of Environmental Conservation (DEC) is also involved in several permitting processes in accordance with its missions to conserve, improve and protect Alaska's natural resources and the environment. The Department of Fish and Game (DF&G), and the Alaska Oil and Gas Conservation Commission (AOGCC) are also involved in the permitting

[201] State of Alaska Legislative Affairs Agency. "Handbook on Alaska State Government," available from http://w3.legis.state.ak.us/docs/pdf/handbook.pdf; Internet; retrieved on September 24, 2008.

process, and are also included in this discussion. The Alaska Department of Labor and Workplace Development, the Alaska Department of Public Safety Division of Fire Prevention, and the Alaska Department of Transportation and Public Facilities also have authority in enforcing safety codes and regulations in the licensing process, however these agencies will not be discussed here for they are not as relevant to the public input process in the management of environmental risks as are the DNR and DEC. For an overview of state agencies involved in the permitting process, see *Figure 1* titled "Generalized Permit Process."

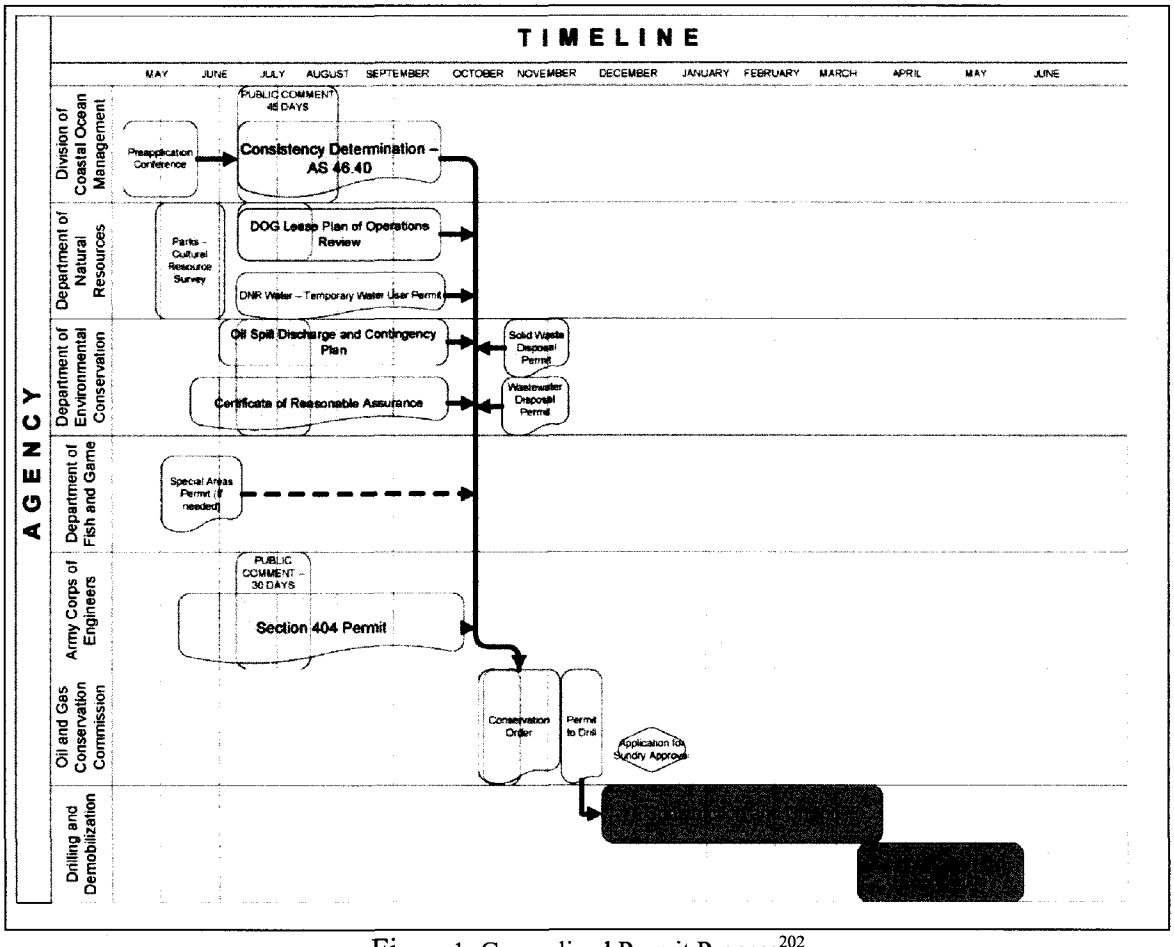

Figure 1: Generalized Permit Process[202]

[202] Alaska DNR Division of Oil and Gas. *Generalized Permit Process.* Available from http://www.dog.dnr.state.ak.us/oil/products/publications/cookinlet/ciaw_2009_final_finding/CI%20PrelimBIF%20Chap07-GovPwrs.pdf , page 7-4; Internet.

4.2.1 Synopsis of the State of Alaska's oil policy development

A brief historical overview of oil in Alaska, and related policy development is necessary in order to understand the current state of legislation.[203] Prior to the 1957 discovery of oil at Swanson River on the Kenai Peninsula, concerns over the economic viability of Alaska marred its campaign as a potential new state to the US. Despite efforts from groups of individual speculators as well as companies, Alaskan oil wells did not produce in commercial quantities. Multinational oil corporations could find and produce oil cheaper elsewhere. During the first half of the 20th century, oil exploration in the Cold Bay region, in the Copper River Basin area, and on the northern coast of the Gulf of Alaska disappointed developers. However, based on the geological descriptions of the US Geological Survey (USGS), and under the urging of President Harding, Congress set aside 25 million acres of land in the North Slope in 1923. This area is known today as the National Petroleum Reserve-Alaska (NPRA). The taking of vast tracts of land has been a controversial issue with the Arctic Slope Inupiat communities who had inhabited this region for thousands of years, due to the lack of negotiations over aboriginal land rights.[204]

It wasn't until the discovery of oil in the Swanson River area of the Kenai Peninsula, that Alaska began its history as an oil state. Ritchfield Oil Corporation filed lease application in the Swanson River area, and by 1955 filed for an exploration unit with the USGS. This area of interest was situated within the Kenai National Moose Range, and prior approval of development from the US Fish and Wildlife Service (USFWS) was required. In spite of protests from the National Wildlife Federation, the USGS and USFWS authorized development, and drilling began in 1957. Early tests showed that the Swanson River fields contained oil in commercial quantities. This discovery prompted a new land rush to Alaska, and gave sizeable support to Alaska's

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[203] This section follows McBeath et al., pp. 23-53.

[204] Eben Hopson Memorial Archives. *Mayor Eben Hopson's testimony before the Berger Inquiry on the experience of the Arctic Slope Inupiat with oil and gas Development in the Arctic.* 1976. Available from http://www.ebenhopson.com/papers/1976/BergerSpeech.html ; Internet; retrieved on February 26, 2010.

statehood campaign. During this time, the number of new applications for leases, and the sudden massive interest in Alaska's development revealed the lack of existing regulation.

The Alaska Oil and Gas Conservation Act of 1955 created the Alaska Oil and Gas Conservation Commission (AOGCC). Abolished in 1959, the Legislature created the new Commission in 1979 to protect the state's interest in total ultimate recovery. The Commission is a quasi-judicial agency, housed within the Department of Administration. The Commission functions as a regulatory agency overseeing underground operations of Alaska's oil industry on private and public lands and waters. The mission of the AOGCC is "to protect the public interest in exploration and development of oil and gas resources, ensuring conservation practices, and increasing ultimate recovery, while protecting health, safety, the environment, and property rights."[205]

Drilling permits for all oil and gas wells in Alaska need to be obtained from the AOGCC. AOGCC orders require a 30-day public comment period. The limited legislation in existence at this point included the Alaska Oil Conservation Act to regulate well spacing, a maximum economic recovery policy, and two oil and gas taxes designed to fund the Alaska Oil and Gas Conservation Commission.[206] The last session of the territorial legislature passed the Alaska Land Act, providing competitive lease bidding on three classes of land (the 1 million-acre Congress-granted Mental Health Lands, University of Alaska lands, and tidal and submerged lands lying within specified parameters of high tide).[207] Following Statehood in 1958, Alaska obtained through Congress the right to all subsurface minerals within its land grant. In its first state legislative session, the state legislature addressed the pressing issues of competitive and noncompetitive lease bidding, royalty paid to the state, and tax rates. Thanks in part to an active industry involvement in these early regulation efforts, and in part to an impoverished state eager to develop its natural resources, oil-related policies were written with the industry's interest in mind. For example, royalty to be paid to the state was set

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[205] Alaska Oil and Gas Conservation Commission. "Mission," available from http://www.state.ak.us/admin/ogc/WhoWeAre/mission.shtml; Internet; retrieved on October 1, 2008.
[206] McBeath et al., 27, quoting Jack Roderick, *Crude Dreams: A Personal History of Oil and Politics in Alaska* (Fairbanks: Epicenter Press, 1997), 99-100.
[207] McBeath et al., 28.

at a remarkably low percentage compared with other geographical locations, and the cost of transporting the oil from well to refinery was deducted from the oil's value.[208] State bureaucracy was still immature and willing to compromise with industry in hopes of bolstering state finances. Indeed, by 1967 oil was the number one income generator in the state.

The next significant event in the economic history of Alaska placed it on the map as an oil-producing giant, and set the course for major political changes in the new state. The discovery of oil on the North Slope in 1968 set into motion a powerful chain of events, with an aftermath that altered the state's economic, social and political landscapes permanently. One of the most significant factors in bringing about such change was the issue of Native land claims settlement. In the 1958 Statehood Act, Congress reaffirmed Alaska Natives' land rights originally set forth in the Alaska Organic Act of 1884. The Organic Act aimed to protect the rights of Alaska Natives to lands, which were in their *individual* and actual use or occupancy; however no legal distinctions were made with regards to vast land areas of *tribal* property.[209] The legal confusion surrounding much of the concept of ownership was at the time, and today still is deeply rooted in cultural differences. For example, for Alaska Native ancestors and descendants, ownership embodies a concept "entirely different from that of western society, yet equally valid (...) The point then was not that the land belonged to the Natives, but rather that the Natives belonged to the land."[210]

Through the Statehood Act, Congress authorized the state to select up to 102.5 million acres of vacant public lands in Alaska, but mandated that Alaska and its people "forever disclaim all right and title...to any lands and property (including fishing rights), the right or title which may be held by Indians, Eskimos, or Aleuts."[211] As the new state began the process of land selections, Alaska Native claims grew to 122 million acres by

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[208] McBeath et al., 29.
[209] David S. Case, and David A.Voluck. *Alaska Natives and American Laws.* (Fairbanks: UA Press, 2002),7.
[210] Case and Voluck, 174-175 quoting Ann Fienup-Riordan, Papers Prepared for Overview Round Table Discussions Alaska Native Review Commission"(February 27 to March 16, 1984, Anchorage, AK. Archived at the University of Alaska Rasmuson Library in Fairbanks).
[211] Case and Volcuk, 56-57.

1951; and by 1966, 150 million acres of state nominated land tracts drew protests by Alaska Natives.[212] A complete history of this period of initial land selections, and the complex legal matter of aboriginal title, are beyond the scope of the thesis.[213] In summary, the legal tug-of-war between the state and Alaska Native peoples over land rights had a huge influence on oil production and legislation, and brought about a landmark piece of legislation, the Alaska Native Claims Settlement Act (ANCSA) of 1971 after the following events described below:

U.S. Secretary of the Interior Stewart Udall issued a land freeze in 1966 in order to suspend any further approval of state land selections, due to the issue of contested land rights. The future of oil production was uncertain. But by this time, the state had been granted tentative approval of some selected land in the Arctic Slope area, and began development. Then in 1968, ARCO (Atlantic Richfield company) discovered good-quality oil in the Prudhoe Bay, in quantities never before seen in the Western Hemisphere. The ensuing interest in North Slope leases, and their increased value prompted the state to sell all its leases in the area, and the owners with the major leases (ARCO, Exxon, BP) began planning the method for transporting crude oil to out-of-state markets. As the plans for a pipeline and an all-Alaska route began to take shape, the resulting 800 mile-long route from Prudhoe Bay to Valdez was to cross areas of Alaska Native land claims, as well as federal lands. Congressional resolution of land claims became urgent as the state began to seek federal and state permits for the construction of a pipeline. ANCSA was enacted December 18, 1971 endorsing land title to 44 million acres of land and approximately $1 billion, to be managed by twelve for-profit Alaska Native regional corporations. These twelve regional corporations were also granted subsurface land rights. A complete analysis of the Claims Act is not possible here, but in short, it converted communal, aboriginal claims of Alaska Natives into private property rights through shares of stock in over 200 various Native regional, village and group

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[212] McBeath et al., 31, quoting Alaska Division of Lands, *1966 Annual Report.*

[213] For more information on aboriginal title, and land selections of this period see McBeath et al., 23-56, and Case and Voluck, 44-63.

corporations.[214] Section 4 of ANCSA also extinguished aboriginal claims. Land allocations were based on population size, and larger villages and regions received more land.[215] With regards to land in the oil-producing North Slope, *village* corporations (without subsurface mineral rights) were allowed to select their estate within the National Petroleum Reserve-Alaska (NPRA). However, the local *regional* Native corporations were prohibited from selecting the subsurface of these lands due the area's reserve status for possible oil production.[216]

The cultural shock of such an abstract, western economic-scheme was immense, as the idea of land as corporate asset was alien to Alaska Native culture and organization. Alaska Native individuals, who up to this point were used to identify themselves by tribal ancestry, now found themselves identified as "shareholders." Additionally, residents of some areas with an otherwise homogenous cultural base found themselves divided into multiple corporations, and therefore divided as shareholders with vested interests in separate corporate entities.[217] ANCSA was a complex, pivotal piece of legislation, bringing with it compromises and a good amount of confusion to guarantee its future amendments and restructuring due to highly intricate provisions.

Following ANCSA, authorization of the Trans-Alaska Pipeline System (TAPS) faced additional hurdles. The National Environmental Policy Act (NEPA) of 1970 had put in place review processes to determine the environmental impacts of proposed federal actions (and alternatives for these actions), through the filing of environmental impact statements (EIS). The final EIS of the TAPS project was finished in 1972, and incorporated Department of Environmental Conservation's design requirement that the pipeline be elevated in areas of unstable soils, such as permafrost. Approval of TAPS did not occur until 1973 however, when Congress passed the authorization act despite protests from an influential environmental coalition. Major international developments,

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[214] Case and Voluck, 157.
[215] Ibid., 161.
[216] Ibid., 159.
[217] For example, Alutiiq Native people of the Kodiak Island area may hold shares in Afognak Native Corporation, or Uganik Native Group, Inc. depending on place of residence.

especially the Arab oil embargo and ensuing oil crisis, played a major role in swinging the political pendulum towards economic, as opposed to environmental considerations.

While the federal legislative branch debated over the authorization of TAPS, regulation and taxation of oil revenues became a battleground between the state and interested oil companies. The pressure in Alaska to negotiate with oil companies grew due to the uncertainties resulting from the Arab oil embargo, and the economic urgency to finalize the exact terms of oil-derived state revenues. By the time the 1973 legislative session debated contested issues such as an adjustable, right-of-way leasing fee for use of the pipeline, and a cents-per-barrel tax on oil companies, the state could no longer withstand lengthy legal battles in the face of strong industry opposition. Governor Egan prepared a compromised proposal for legislative consideration, one that saw the right-of-way leasing fee repealed. This period of oil policy development in Alaska, much like that of the 1950s, was characterized by a lack of legislative expertise, and economic pressures resulting in industry-tailored regulations. Because the atmosphere favored quick development, things progressed quickly; pipeline construction began in 1974 and oil began to flow in 1977.

A later attempt to reform the way oil companies were taxed by increasing Alaska's capacity to assess oil taxes based on local profitability, as opposed to the companies' global earnings, failed. This so-called "separate accounting" tax reform initially gained momentum in the profitable economic climate of 1978, partly due to the national political mood in the wake of Watergate politics. The legislation drew instant legal challenge from oil companies, and ended up in Supreme Court. Due in part to shifting legislative powers in Congress favoring Republican agendas, and in part to concerns over losing the case, Governor Hammond sponsored legislative repeal of the separate accounting tax. The repeal then passed state legislature in 1981. In 1985 the court ruled in favor of separate accounting, but the state did not reinstate the tax.

Following the Exxon Valdez oil spill in 1989, attitudes toward the oil industry changed enough to fix a legislative loophole, which up until that point allowed profitable Prudhoe Bay wells to claim tax breaks based on the Economic Limit Factor (ELF), a law

designed to help develop marginal oil fields. However, despite the atmosphere favoring environmental legislation and increased taxing, significant reforms were not likely by this time due to the declining production value of Prudhoe Bay wells threatening loss of oil investments in the state. The debate over oil investment and state revenues has shifted to the issue of drilling in the Arctic National Wildlife Refuge, a nearly 20 million acre refuge spanning multiple ecological regions. The refuge was established in 1960, and originally included nearly 9 million acres of land. This number increased to nearly 20 million acres following the Alaska National Interest Lands Conservation Act (ANILCA) of 1980, with nearly all of the land receiving wilderness status, except for a 1.2 million acre coastal area known as "Area 1002." ANILCA left the door ajar for pro-development decisions in the future. Section 1002 allowed for investigation of the area's oil and gas potential, but required Congressional action for authorization of oil and gas leasing and development. The debate over drilling has been ongoing ever since, with wilderness advocates having the upper hand, because it is always easier to block policy change, than to bring it about. A policy change in this case would require that pro-drilling advocates successfully set oil development on the agenda, and see it through the implementation phase.

ANILCA also added significance to the development of public input process in Alaska. Title VIII of ANILCA authorize rural Alaska residents to take wild renewable resources for subsistence purposes, while the overall administrative scheme of ANILCA required the state to set up a system of local advisory committees and regional advisory councils.[218] The Alaska Department of Fish and Game (ADF&G) implements this scheme, formulates management plans to support the constitutional mandate to maintain fish and game populations on sustained yield principles and ensures that the 81 local advisory committees and the general public "are provided an opportunity to participate in the state's regulatory process."[219] The 81 regional advisory committees provide local forums to discuss fish and wildlife issues, and to develop regulatory proposals for

[218] Case and Voluck, 272, 289.
[219] Alaska Department of Fish & Game. "Boards Support," available from http://www.boards.adfg.state.ak.us/bbs/index.php, Internet; retrieved on July 23, 2008.

submission to the appropriate Board. In addition, these local committees are tasked with advising the appropriate regional council on resources.[220]

In sum, the history of oil-relevant policy in Alaska tells of a state dependent on oil firms for jobs, development of infrastructure, capital and access to world markets due to its lack of diversified economies.[221] McBeath et al. point to the easy access of oil industry lobbyists to legislators, and a public supportive of economic development as signs of a powerful oil industry, poised to gain favorable tax terms and high profits in the new state, but with a few caveats to their dominance: first, the oil industry has benefited most under a Republican controlled legislature, while it found the political mood more adversarial in the Democrat-lead sate. Second, oil companies lost their dominance during periods of eco-disasters, and the ensuing mobilization of opposition, such as the Exxon Valdez oil spill and its aftermath, making it more difficult to conduct closed-door talks with bureaucrats.[222] In addition, federal involvement during the early years of development diversified the list of stakeholders, and with multiple interests involved the oil industry was forced to compete under greater pressure.[223] The policy development of ANCSA well illustrates this point.

Declining oil production and revenues have influenced petroleum tax policy from the 1990s up until today. As the petroleum industry began looking for avenues to finance its endeavors and stay in business, so too the state has been promoting oil field investments; causing the relationship between state and the oil industry to shift towards one of accommodation, negotiation, and bargaining.[224] In this process there has been a significant loss of transparency, as state agencies have achieved a stronger institutional capacity to bargain directly with industry, but often in closed-door talks.[225]

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[220] Alaska Department of Fish and Game. "Boards Support,"available from http://www.boards.adfg.state.ak.us/advisory/index.php, Internet; retrieved on July 23, 2008.
[221] McBeath et al., 52.
[222] Ibid.
[223] Ibid., 53.
[224] Ibid., 105.
[225] Ibid.

4.2.2 State departments and the public process today

The idea of participatory democracy has a strong tradition in US politics.[226] The benefits of participation stem from community-level involvement, through which citizens and officials alike are educated about their communities.[227] This section provides an overview of public avenues in Alaska's oil administration regime, and the mechanism they provide for public input. This is an analysis of the inclusion process at the state altitude, at the two state agencies, the Alaska Department of Natural Resources (DNR), and the Alaska Department of Environmental Conservation (DEC) that oversee the bulk of permitting procedures in oil development.

Department of Natural Resources (DNR)

Within the DNR's Division of Oil and Gas, the Exploration Incentives Program allows the DNR Commissioner to adjust royalties reserved to the state, in order to encourage production on otherwise uneconomical fields or pools. The preliminary findings and decision made by the Commissioner in response to an application filed under the royalty modification legislation are given public notice of a 30-day public comment period. Additionally, the Commissioner is to offer to appear before the Legislative Budget and Audit Committee to provide a review of the Findings and Determination and administrative process of the royalty modification.[228] Interested organizations and individuals may provide input during the public comment period. The Commissioner will prepare a summary of public comments and a "Final Findings and Determination" once these requirements for public and legislative input are met.

The Exploration Licensing Program evaluates proposals submitted to the agency to conduct exploratory activities. According to the program's website:

> Within 30 days of receiving any proposal, the commissioner will either reject it in a written decision or give public notice of the intent to evaluate

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[226] Jeffrey M. Berry, The Rise of Citizen Groups. In *Civic Engagement in American Democracy,* ed. Theda Skocpol and Morris P. Fiorina, 367-393. (Brookings Institution: Washington, D.C., 1999), 367.
[227] Ibid.
[228] Alaska Department of Natural Resources, Division of Oil and Gas. "Exploration Incentives Program," http://www.dog.dnr.state.ak.us/oil/programs/incentives/incentives.htm. Retrieved on September 24, 2008.

> the proposal's acceptability. This notice will solicit public comments on the proposal(s) and request competing proposals. The commissioner may also modify any proposal and request a new one based on those modifications.[229]

After reviewing all public comments, and submitted proposals, the commissioner will issue a written "Best Interest Finding" determining whether granting the exploration license is in the state's best interest.

The Division of Oil and Gas conducts competitive oil and gas lease sales on state lands through its Lease Sale Program, and submits its Five-Year Oil and Gas Leasing Program to the Alaska Sate Legislature each January per AS 38.05.180.[230] This section also coordinates the public and agency review of proposed sale areas, and develops the Best Interest Findings, as well as the Alaska Coastal Management Program consistency findings.[231] The sale of oil and gas leases is the initial step in the process that generates the majority of the state's income. According to the DNR website:

> Prior to a lease sale there is ample opportunity for individuals, organizations and agencies to comment on potential impacts of oil and gas exploration, development and transportation, and for agencies to consider these impacts. In response to comments received, and as a result of its own analysis, the Division of Oil and Gas develops mitigation measures designed to eliminate or reduce potential negative impacts that might occur. The division director then determines, in writing, whether or not it is in the state's best interest to proceed with a sale.[232]

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[229] Alaska Department of Natural Resources, Division of Oil and Gas. "Exploration Licensing Program," available from http://www.dog.dnr.state.ak.us/oil/programs/licensing/licensing.htm. Internet; retrieved on August 7, 2008.

[230] Alaska Department of Natural Resources, Division of Oil and Gas. "Lease Sale Program," available from http://www.dog.dnr.state.ak.us/oil/programs/leasesales/leasesales.htm. Internet; retrieved on September 24, 2008.

[231] State of Alaska Legislative Affairs Agency. "Handbook on Alaska State Government," available from http://w3.legis.state.ak.us/docs/pdf/handbook.pdf; Internet; retrieved on September 24, 2008.

[232] Alaska Department of Natural Resources, Division of Oil and Gas. "Introduction," available from http://www.dog.dnr.state.ak.us/oil/products/publications/otherreports/5year99/5year99_intro.htm. Internet; retrieved on September 29, 2008.

Another division, the Division of Coastal and Ocean Management (DCOM) is responsible for the overall administration and management of the Alaska Coastal Management Program (ACMP). The ACMP was implemented by Alaska legislation in 1977 as the state's effort to create a voluntary partnership with the Coastal Zone Management Act passed by Congress in 1972. This individual state program is designed to manage coastal resources (such as petroleum resources), and to improve stewardship of Alaska's natural resources. *Chapter 4.3* offers an in-depth case study of the ACMP and its implications on the public process.

The Coastal Impact Assistance Program (CIAP) was signed into law in Section 384 of the Energy Policy Act of 2005 (Public Law 109-58). The CIAP is another example of a voluntary, joint federal-state partnership. Under the CIAP, the Secretary of the Interior is authorized to distribute federal funds to Outer Continental Shelf (OCS) oil and gas producing states in order to mitigate the impacts of OCS oil and gas activities.[233] The Act provides that 35% of each OCS producing state's share of the funds will be distributed among its Coastal Political Subdivisions (the local political subdivision immediately below the level of state government, including counties, parishes, and boroughs).[234] The State of Alaska has eight Coastal Political Subdivisions meeting the criteria to receive CIAP funds, to include the Municipality of Anchorage, Bristol Bay Borough, Kenai Peninsula Borough, Kodiak Island Borough, Lake and Peninsula Borough, Matanuska-Susitna Borough, North Slope Borough, and Northwest Arctic Borough.

The State of Alaska, and its eight Coastal Political Subdivisions may submit their project proposals each year to the Department of the Interior, Minerals Management Service through the DNR's Division of Ocean and Coastal Management. The development of the state's CIAP Program Plan must be carried out with public

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[233]Alaska Department of Natural Resources, Division of Coastal and Ocean Management. "Coastal Impact Assistance Program," available from http://www.dnr.state.ak.us/coastal/CIAP/ciap.htm. Internet; retrieved on August 7, 2008.

[234] Alaska Department of Natural Resources, Division of Coastal and Ocean Management. "State of Alaska CIAP Final Plan," available from http://www.dnr.state.ak.us/coastal/CIAP/ALASKA%20CIAP%20-FINAL%20PLAN.pdf; Internet; Retrieved on September 30, 2008.

participation, and be open to public comments per CIAP's authorizing legislation. The governor of each state must certify and detail in writing the public participation process that preceded the final plan. Generally speaking, this public participation includes a 30-day public comment period, and a public meeting. In addition, interested individuals and organizations may participate at their local Coastal Political Subdivisions in the drafting of project proposals. In 2008 the Northwest Arctic Borough, which consists of eleven Inupiat villages and is Alaska's second largest borough, proposed two projects designed to enhance public participation, and to increase the role of local knowledge in decision-making. The projects are titled "Improving Public Involvement for Implementation in Federally Approved Plans", and "Village-Based Environmental Monitoring to Protect Coastal Areas."

The Division of Mining, Land and Water is involved if an operation uses significant amounts of water. Public input in the form of comments, or objections regarding water appropriations is handled through this unit. *Figure 2* titled "Department of Natural Resources: Public Input Process in Oil and Gas Development Management" provides a visual guide to the existing avenues for public input at the DNR. It shows that DNR's divisions accept public comments for review and this method is the status quo for direct citizen participation in agency decisions. This is a mechanism that is promoted by numerous state agencies, and is often used by citizens. However, this method of civil engagement exhibits signs of technocratic institutionalization of knowledge. The administrative agency holds a monopoly over ultimate truth claims - public comments and industry proposals bottleneck at the top on the desk of high ranking experts, who possess a great deal of discretion in making final determinations. The only recourse citizens have by which to counter these expert decisions, is to raise objections with the same agency and elevate the matter for final review by the highest ranking expert: the agency's own Commissioner, or seek a legal resolution through the court system. Stakeholders may also participate in their local governments, where public face-to-face meetings are often used in the uptake of citizen input. Such public engagement can

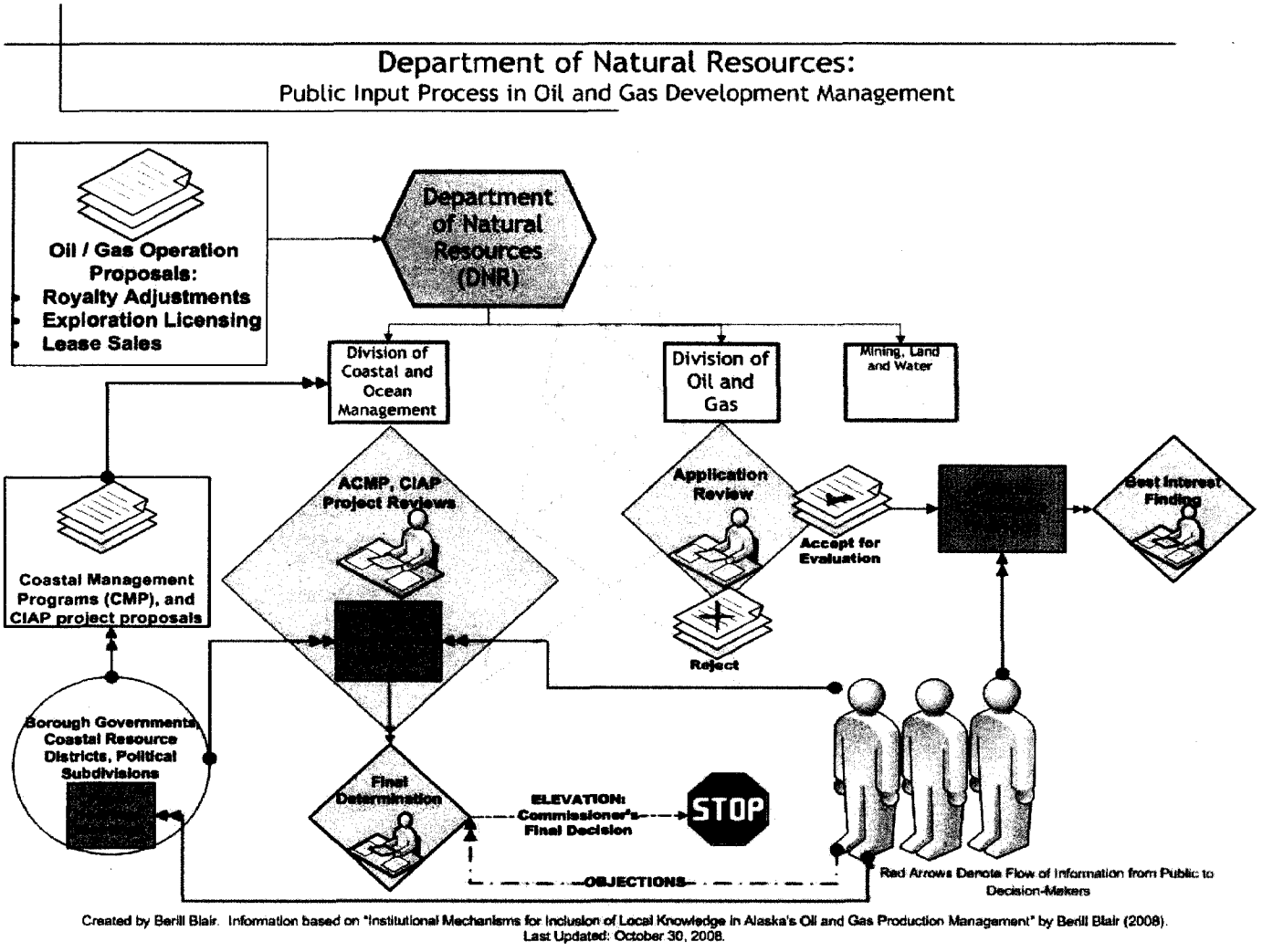

Figure 2: Department of Natural Resources: Public Input Process in Oil and Gas Development Management

increase the reciprocity of the expert-citizen relationship by allowing for two-way communication between policy makers and citizens.

Department of Environmental Conservation (DEC)

In order to obtain a permit for an operation to drill in an area where oil may be found, a DEC oil discharge prevention and contingency plan approval must be submitted and approved.[235] The Division of Spill Prevention and Response is charged with oversight of this process. Before the approval of such a plan, the DEC publishes a public notice for comments on the proposed permit, and may hold a public meeting if residents of the governing body in the affected area request so in writing.[236] The Division of Air Quality issues and renews air permits for industrial activities involving emissions to the air. Proposals to issue or renew air permits are subject to a public comment period, during which interested members of the public may submit written comments to the DEC, or request a public hearing. The Division of Environmental Health: Solid Waste Program manages waste for industrial operations. A waste disposal plan must be submitted to the Solid Waste Program.[237] Public complaints regarding waste disposal are also handled by this unit of the DEC.

Figure 3 titled "Department of Environmental Conservation: Public Input Process in Oil and Gas Development Management" illustrates the public input process in the management of oil resources at the DEC today. The DEC used to be a part of the Alaska Coastal Management Program (ACMP), and its consistency review process, but the 2003 reforms made to the program removed matters regulated by the DEC, and currently the DNR is the sole agency coordinating the ACMP.[238] The removal of the DEC from the consistency review process has reduced the options available to the public for input about oil project proposals. As *Figure 2* shows, public access to DNR decisions is mandated by

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[235] *Petroleum News*, "Dispelling the Alaska Fear Factor: Guide to Alaska's Oil and Gas Basins and Business Environment" (2007), 9.4.
[236] Alaska Department of Environmental Conservation. "Public Notices," available from http://www.dec.state.ak.us/public_notices.htm; Internet; retrieved on October 1, 2008.
[237] *Petroleum News*, "Dispelling the Alaska Fear Factor," 9.5.
[238] More information on this DEC "carve out" can be found in the case study under *Section 4.3.2*

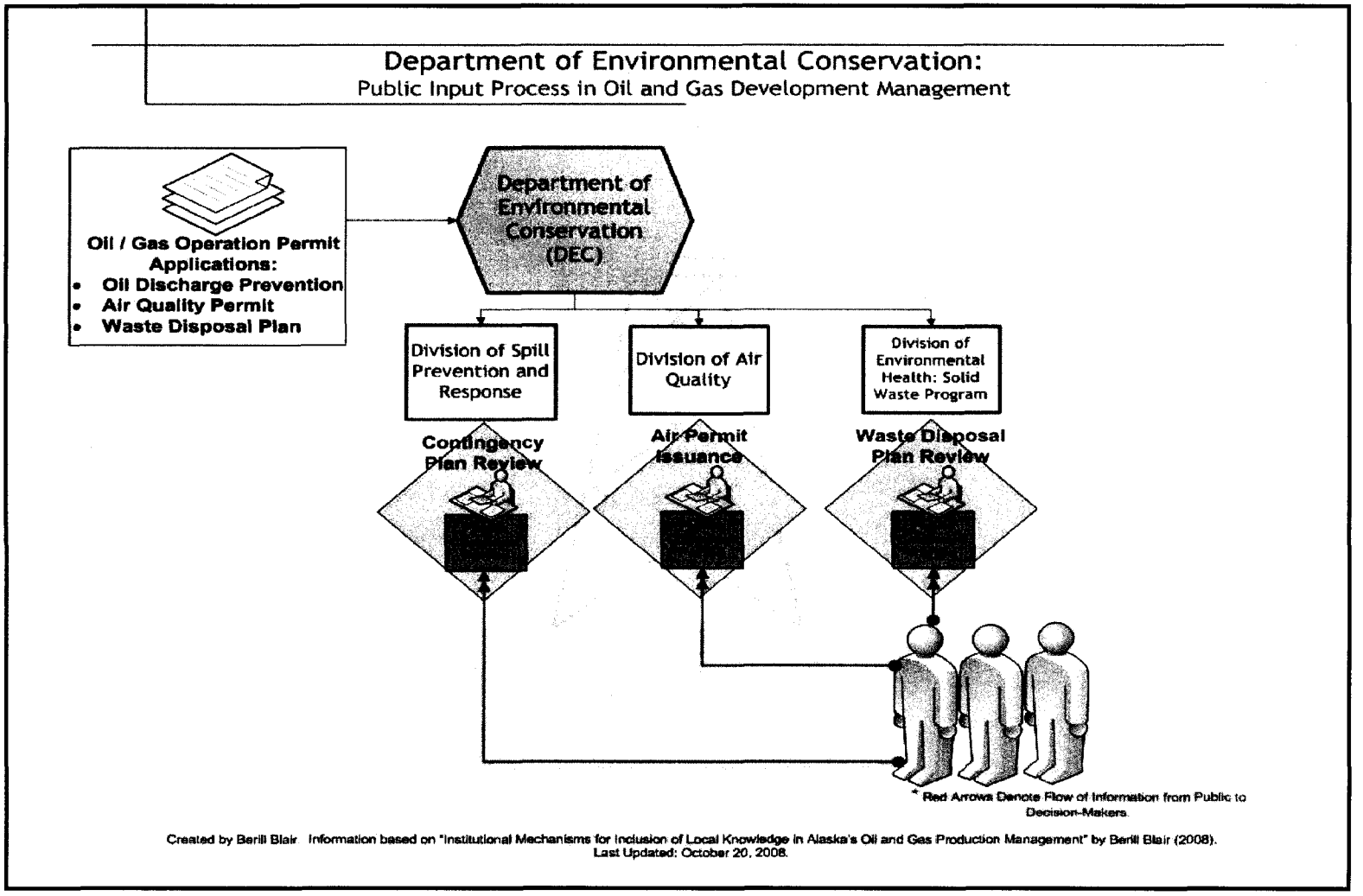

Figure 3: Department of Environmental Conservation: Public Input Process in Oil and Gas Development Management

the requirements of the consistency review process. Citizen input can reach officials via direct comments, and through their local governments and the public meetings they must conduct. Per the reformed ACMP, local governments no longer have authority to adopt policies that address air and water quality concerns via the DEC, and these are excluded from the consistency review process. The DEC, whose mission is to " conserve, improve and protect Alaska's natural resources and environment to enhance the health, safety, economic and *social well being* of Alaskans,"[239] still accepts public comments during issuance of permits for oil and gas operations, but local governments and their CMPs are severely restricted in setting environmental standards, and transmitting local input. This next case study digs deeper into the politics of knowledge inside the ACMP, searching for connections between stakeholder transactions, and the RS thesis.

4.3 Case Study: The politics of conflicting rationalities inside the Alaska Coastal Management Program

Local governments may have their own permitting requirements with regards to natural resource development, and the North Slope Borough (NSB) offers a good example of such local participation. The available avenues for public input are somewhat wider than at state department, because they often include public hearings in addition to comment periods. Agents of local governments are closest in physical and cultural proximity to local citizens, and it is often at this level that local and traditional knowledge enters policy initiatives. This transaction is often aided by tribal governments and organizations, which may increase local-level participation and inclusion of traditional and local knowledge in decision-making. After a brief overview of the public input process at NSB departments, this case study begins with a discussion of the changing pillars of risk for local communities.

The NSB Department of Planning and Community Services (DPCS) is responsible for protecting the land and cultural resources, managing land assets and fostering future growth, and supporting community sustainability and local traditions and

[239] Alaska Department of Environmental Conservation. Internet; Available from http://dec.alaska.gov/index.htm ; Retrieved on February 26, 2010.

lifestyles. Among the goals stated in the NSB DPCS mission statement; the Borough's policy is to "Empower community-level decision-making in social, economic and development issues."[240] More specifically, this goal states the NSB's dedication to hold workshops, and community-wide meetings to enhance community understanding and participation in decision-making, and to reach consensus on issues of economic, social and cultural importance. The overall management and direction of the DPCS is the responsibility of the Central Office. The office is often the first point of contact for the public, and for the various departments of the NSB. Its Village Affairs division provides representation to village residents, by coordinating responsive services through workshops and communications between residents and state and federal government officials, and the private sector. The office also monitors the NSB Comprehensive plan.

The DPCS Land Management Regulation Division's Permitting Section is charged with ensuring compliance with land management regulations, including monitoring the CMP. The Permitting function of this section makes it a point of contact for Borough residents who wish to comment on development in their area. Moreover, the Permitting Section coordinates communication among groups proposing development, and village governments and residents.

NSB Department of Wildlife Management (DWM) administers the review of major technical and policy documents that may affect the borough's environment, wildlife resources, or subsistence users. These reviews include environmental impact statements, and environmental assessments.[241] The department itself does not hold public hearings, but attends those hearings as a representative for NSB residents. The DWM represents the borough in dealings with the multi-agency North Slope Science Initiative (NSSI), which was established in 2004. The goals of the NSSI are to provide a science-based framework to guide the development of inventory, monitoring, and research activities on the North Slope. Through prioritizing projects, and coordinating research

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[240] North Slope Borough. "Department of Planning and Community Services," available from http://www.north-slope.org/departments/planning/index.php#mission; Internet; retrieved on October 2, 2008.

[241] North Slope Borough. "Department of Wildlife Management," available from http://www.north-slope.org/departments/wildlife/; Internet; retrieved on October 2, 2008.

activities across multiple agencies, the NSSI aims to improve the flow of information across these platforms, as well as among the public and decision-makers. *Section 4.4.2* provides more information in an in-depth case study of the NSSI.

The NSB Planning Commission makes amendment recommendations to the NSB Assembly on the NSB Comprehensive Plan, the NSB Coastal Management Plan, and also recommends public improvements. Members of the Planning Commission come from the eight villages of the NSB. The permitting process for various uses of NSB land, including development, includes a public comment period. If a permit requires a coastal review, the reviewing parties may include the Alaska Eskimo Whaling Commission, the Inupiat Community of Arctic Slope, and Native Village Tribal Councils, or village corporations who are also notified of the written comment period.[242]

Figure 4 titled "North Slope Borough: Public Input Process in Oil and Gas Development Management" outlines the avenues for public input at NSB departments. Public hearings and meetings facilitate the uptake of local input at all points of contact within these agencies, supporting the notion that local governments use more democratically engaged, responsive communication methods, than do top-level departments.

The following is an overview of a case of conflict following the inclusion of local knowledge in expert institutions. This case is a good example of the power struggle that may occur when diverse group of stakeholders from federal, state, private and municipal organizations clash over diverging interests. In *Chapter 4.5,* the case study concludes with reflections on the role of RS and environmental risk as grounds for this conflict.

[242] *Petroleum News,* "Dispelling the Alaska Fear Factor". 9.14.

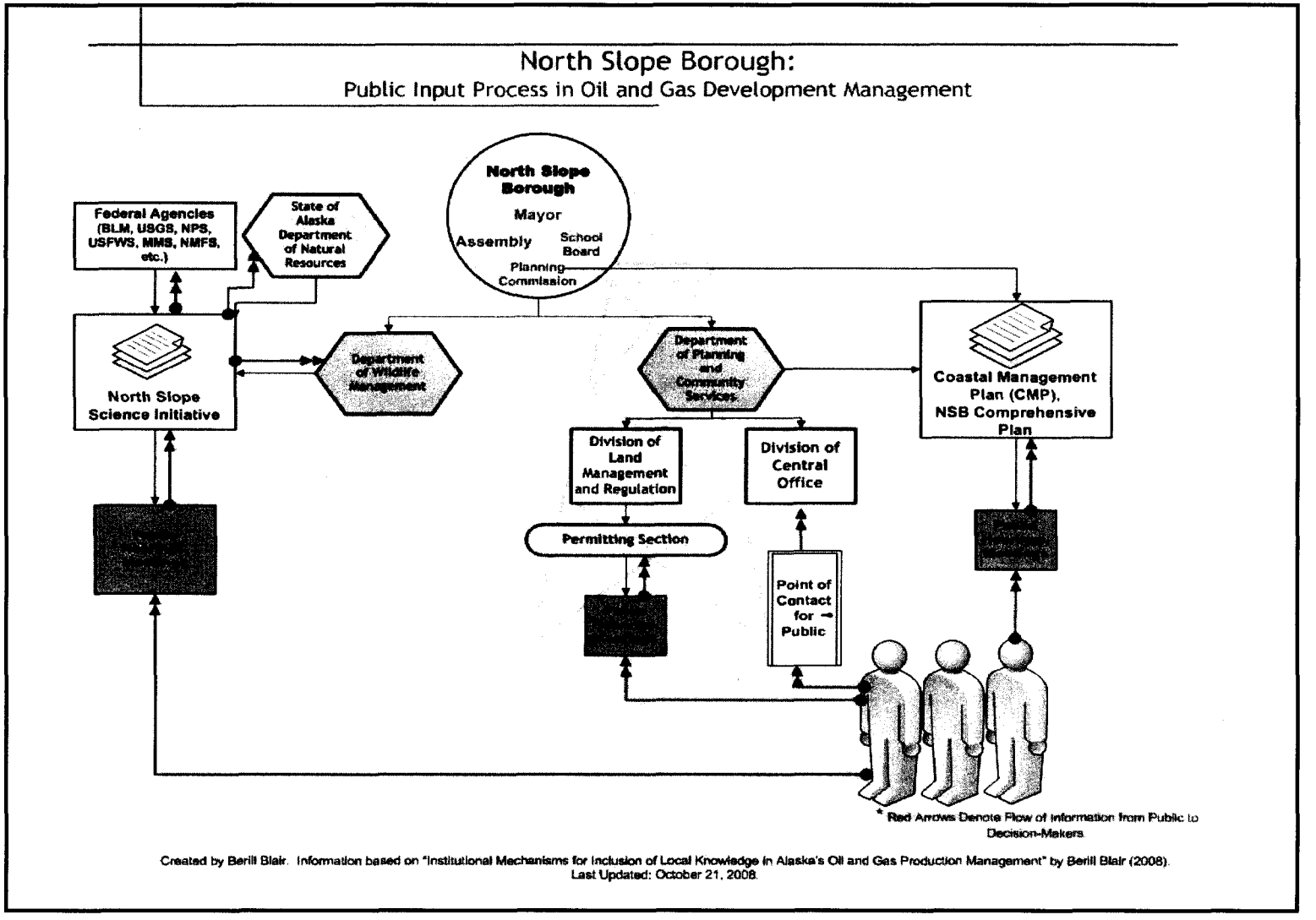

Figure 4: North Slope Borough: Public Input Process in Oil and Gas Development Management

4.3.1 The changing pillars of risk: Subsistence issues and oil development in the North Slope Borough

The dimensions of the North Slope Borough are immense. It is a municipality encompassing 89,000 square miles, with a population of about 7,000 people who live in eight villages. For a map of the NSB villages, see *Figure 5* titled "Villages of the North Slope Borough."

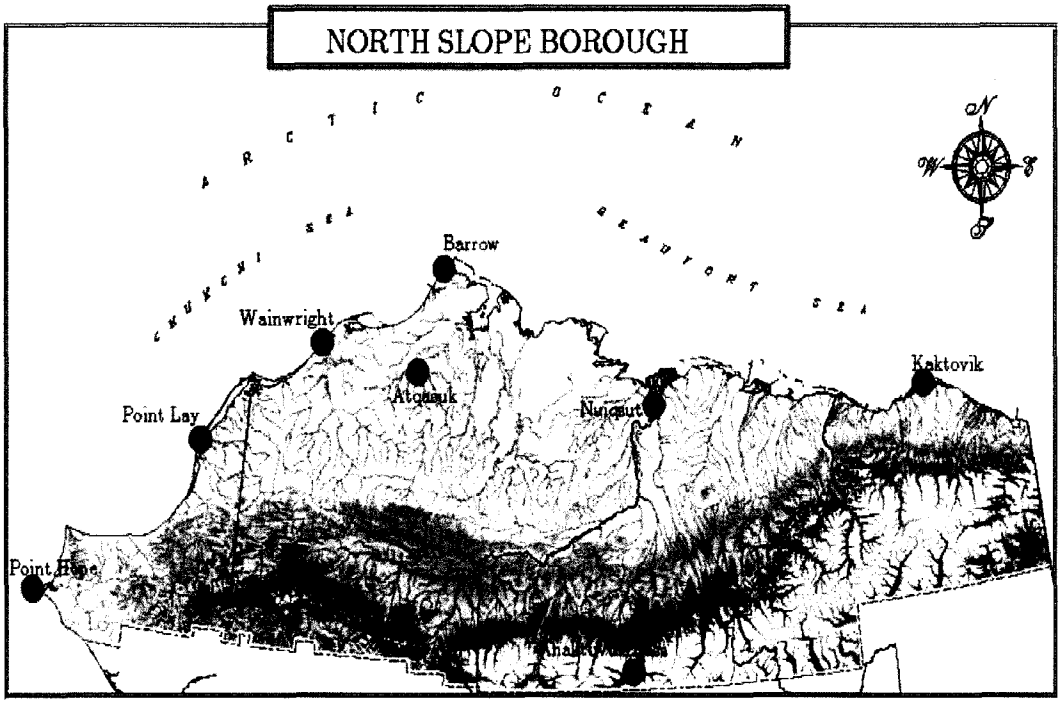

Figure 5: Villages of the North Slope Borough[243]

The largest village, and the center of government for the NSB is Barrow. The NSB is bordered by the foothills of the Brooks Range to the south, and the Arctic Ocean to the north. "The North Slope is a land of superlatives. On an annual basis, its coastal area has the coldest climate in Alaska; the region contains the nation's largest oil field; and Barrow, the northernmost community in the United States, has one of the largest Eskimo

[243] Source: www.north-slope.org.

populations in the world."[244] The NSB was incorporated in 1972, largely due to the efforts of Inupiat leader Eben Hospon who became the borough's first Mayor. The Inupiat of the North Slope decided to form a local governmental unit above all else, in order to maximize self-determination. Mayor Hopson saw an opportunity for a bright future for his people:

> We wanted to determine for ourselves the nature of our destiny and then, act to fulfill that destiny to the best of our ability. We believed the right of self-determination was inherent within the constitutional provision for a "maximum of local government." That is why we established our North Slope Borough.[245]

When the borough started, it had initial revenue of 500 thousand dollars, and had to overcome a series of legal challenges brought about by the oil industry, and the reluctance of the state legislature, who together fought the incorporation of the borough and its authority to tax.[246] The NSB developed despite these initial challenges, but has since, to some, become a model for indigenous self-determination through municipal government.

> The borough has also met resistance to its claims to control of the land, waters, and subsistence resources that are closely associated with traditional Native values. Conflicts with external agencies and interests have been central and persistent in the experience of the borough's leaders, who accordingly have been preoccupied with strengthening and exercising the centralized regional authority necessary to defend and

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[244] North Slope Borough. "History of the North Slope Borough," available: http://www.north-slope.org/nsb/69.htm ; Internet; retrieved on February 27, 2010.

[245] Eben Hopson Memorial Archives. Re: Proposed Ad Valorem Tax on Oil Properties: A Statement of Policy. Available from http://www.ebenhopson.com/papers/1973/AdValoremPosition.html ; Internet; retrieved on February 27, 2010.

[246] *Beaufort Sea Region Governance Study Executive Summary*. Bureau of Land Management. Internet; Available from http://www.mms.gov/alaska/reports/1970rpts/78_TR16A ; Retrieved on February 27, 2010,.3.

> extend North Slope claims to self-determination vis-a-vis outside authorities and interests.[247]

However, the perception of the NSB as a vehicle for self-determination may not be homogenous among its residents, after all, the borough is a modern bureaucracy, whose bureaucratic functions are funded by "Big Oil" projects.[248]

The Inupiat have lived in the Arctic for thousands of years, and have subsisted on whale, caribou, seal, walrus and birds. For the North Slope Inpuiat people, subsistence is still the predominant way of life, and a continuation of a traditional way of life.[249] Subsistence is a vital part of Inupiat culture and still provides the bulk of Eskimo diet. Yet the revenue derived from oil resource development also plays a major part in NSB's cash economy and infrastructure, much the same way it sustains the state economy. Taxes from the oil and gas industry accounted for more than 98 percent of 2007 property tax revenues to the borough.[250] The revenue from oil and gas property taxes is used to empower local communities in areas of healthcare, and education, and to increase the political capacity of the Inupiat people by boosting the financial resources of NSB programs. In this way the municipality of NSB and the North Slope oil industry have evolved together, side-by-side and have shared the natural resources of this region.

The relationship between the NSB and the oil industry is based, on the one hand, on collaboration due to shared economic interests. On the other hand however, the NSB has to also fulfill social and cultural needs that are very important to its Inupiat stakeholders, but may conflict with economic incentives. Borough agencies often conduct public hearings before making decisions on proposals, and solicit IK from residents regarding subsistence areas under review, in order to combat the environmental risks posed by the oil industry. Prior to the 2003 reforms made to the Alaska Coastal Management Program (ACMP), local governments had significant authority over

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[247] Bureau of Land Management (1978), 3.
[248] See Point Hope residents' comments in: Peter Matthiessen, "Big Oil and the Inupiat-Americans," *The New York Review of Books,* 22 November 2007, Internet; Available from http://www.nybooks.com/articles/20835 ; Retrieved on February 28, 2010.
[249] North Slope Borough Coastal Management Program. *Areas Meriting Special Attention.* 1989.
[250] Alaska Oil and Gas Association. *The Role of the Oil and Gas Industry in Alaska's Economy.* 2008. Available from http://www.aoga.org/pdfs/report2008.pdf ; Internet; retrieved on February 27, 2010, 58.

permitting, and were able to set district-enforceable policies regarding environmental standards on lands falling within 25 miles of the coast, and applicable even to those federal projects that met the criteria for ACMP consistency review.

Oil development poses direct environmental risks such as contamination of wildlife, waters, and soil due to toxic discharges, and disruption of subsistence activities such as bowhead whale migration due to pollution and noise from offshore drilling. Should these risks materialize, the Inupiat culture and way of life is endangered. Oil extraction is also indicted for its association with greenhouse gas emissions, and climate change, therefore its connection with the RS thesis is quite inherent. In the RS risks are decision contingent, irreversible, and unrestricted in their temporal and spatial effects. The potential negative externalities of oil resource extraction match Beck's criteria for these manufactured risks, since the side effects of large-scale crude oil pollution are carried long distance both by water and atmospheric currents (via evaporated noxious fumes), and can disrupt marine and terrestrial life for many years.[251] A major component of stakeholders' risk perceptions is the element of uncertainty about environmental degradation. While the majority of NSB residents have supported onshore oil development, offshore oil projects still draw opposition (see *Section 4.3.3*). Inupiat Eskimo consider the ocean their people's garden and the potential for oil-related disaster a real risk. "A million gallons of oil in the Beaufort or Chukchi seas would be devastating and there can be no denying that the risks are real and particularly challenging under seasonal conditions of ice and weather and darkness."[252] The difference between experts and citizens often is in the timing of when risks begin to exist, and in the perceived magnitude of consequences: to NSB locals, the potential harm from offshore oil development may seem imminent, unavoidable, and above all, devastating. In the meantime, risk managers living far away may examine risk potentials for their

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[251] Charles H. Peterson et al., Long-Term Ecosystem Response to the Exxon Valdez Oil Spill. *Science.* (2003). 302(5653): 2083-2086.

[252] Alan Bailey. "North Slope Mayor Urges Caution in Arctic Development," *Anchorage (Alaska) Daily News.* [newspaper on-line], 5 December 2009; Internet; Available from http://www.adn.com/2009/12/05/1042631/north-slope-mayor-urges-caution.html ; Retrieved on February 28, 2010.

mathematical calculability, and may write off unintended consequences in contingency plans. Just how personal risks are to stakeholders is a factor of their risk rationalities. In the RS, social and scientific rationalities clash.

Residents of the NSB are consumers of both the benefits and risks of oil resource extraction. NSB and state officials are accountable to the public, especially when the potential for harm to health and culture exists. The NSB's participation in the ACMP used to provide a meaningful forum for IK input, but the amended program restricts local input in the permitting process.

> Under the revised statewide standards, subsistence resources under the preferred alternative may receive a reduced level of identification, priority, and protection by the districts. Districts' ability to designate subsistence use areas and to create subsistence use policies is more limited and they no longer have the "seat at the table" they had under the CPC. Also, districts will no longer have the ability to negotiate with applicants to provide mitigation for any negative impacts to subsistence resources that result from an approved project, no matter how minimal.[253]

Beck notes that in the RS risk definitions are often manipulated by decision makers in charge of risk regulations, who try to interpret risks away. Shielding a program such as the ACMP from the information it was designed to pool can produce a risk regime where risks are trivialized. According to Beck, the industrial model for wealth distribution has changed, and its 'logic of wealth' no longer applies in the RS. The fundamental difference between industrial society and RS is, that in RS the distribution of wealth and risks are no longer compatible with each other.[254] Democratic institutions designed to safeguard social well-being are increasingly aware of new, social definitions of wealth, and the interest groups pursuing these causes. The ACMP reforms however have caused a disconnect between citizens and officials, and increased the hegemony of technocratic institutions.

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[253]Ocean and Coastal Resource Management. *Final Environmental Impact Statement.* Internet; Available from coastalmanagement.noaa.gov/assessments/docs/akfeis.doc ; Retrieved on February 27, 2010, 186.
[254] Beck (1992), 154.

4.3.2 Citizens, experts and inclusion: The public process under the reformed Alaska Coastal Management Program

The primary purpose of the ACMP is twofold: it is to facilitate economic development, while protecting coastal resources and their uses. Coastal residents were meant to benefit from the involvement of their local government in the ACMP, especially so before the sweeping reforms of 2003. There are 35 coastal districts in Alaska, by and large consisting of local (borough level) governments. Each coastal district develops its own coastal management plan (CMP), creating policies that align with the districts' goals and objectives for development in their own area. Once approved, district CMPs become part of the ACMP. The NSB Coastal Management Plan under ACMP was initially created in 1988 in order to enhance local management of coastal resources, while providing for future growth and conservation. The integration of traditional knowledge into management decisions was one of many priorities of the CMP.[255] The uptake of traditional knowledge in the ACMP process showed promise, as evidenced by the participation of the Alaska Eskimo Whaling Commission (AEWC) in the review process. Originally formed in 1977, the AEWC represents the ten bowhead-whale subsistence hunting villages of Barrow, Nuiqsut, Kaktovik, Pt. Hope, Wainwright, Kivalina, Wales, Savoonga, Gambell, and Little Diomede. The AEWC is a critical regional entity, and it often participated in ACMP consistency review processes. In doing so, the AEWC has relied on the NSB CMP, as a positive force and legal basis in including traditional knowledge in the regulation of coastal activities:

> The NSB could incorporate Inupiat traditional knowledge of environmental conditions into its consistency reviews that would otherwise not play a role in regulation of coastal activities. The NSB also was able to require applicants to consult with the AEWC on matters that could adversely affect the subsistence bowhead whale hunt. The ACMP and the NSB CMP thus have played an important, positive role in bringing

[255] North Slope Borough. *CMP Scoping Report.* Internet; Available from http://www.north-slope.org/programs/coastal_management/Scoping%20report/text/Appendix%20B.pdf retrieved on November 25, 2009, 2.

operators and subsistence communities together to avoid potential conflicts.[256]

Under the old NSB CMP, the AEWC was able to effectively communicate Inupiat traditional knowledge to influence development decisions. For example, Inupiat IK was instrumental in stopping a flawed project from moving forward, when, during a consistency review process the AEWC demonstrated that the designs for a drilling structure on an ice island were inadequately prepared to withstand the ice forces in the area.[257]

The approval process designed by ACMP was intended to create a network of federal, state, and local interests, and to ensure a single review and approval process for oil and gas projects. The ACMP requires that projects in Alaska's coastal zone meet ACMP's statewide standards, as determined by coastal resource management professionals, before project permits are issued.[258] This coastal zone includes lands falling within 25 miles of the coastline, excluding federal lands. However, if a coastal district can prove that a federal activity, or an activity that requires federal permit affects lands or water within the jurisdiction of the coastal district, then the permitting process must meet the ACMP consistency review requirements, and districts enforceable policies must be followed. In accordance with 11 AAC 110.010, coastal districts and local stakeholders are included during the consistency review process if the proposed project affects coastal waters and resources, even in cases of federal uses such as offshore drilling projects. In addition to district-level input through CMP, the public may also provide their input during a public comment period. Interested coastal residents, as well others may submit written concerns regarding project inconsistencies with ACMP's

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[256]Alaska Department of Natural Resources. "Comments of the Alaska Eskimo Whaling Commission to the Alaska Office of Program Management and Permitting on the Alaska Department of Natural Resources' Preliminary Recommendations for the Amended North Slope Borough Coastal Management Plan" (July 2006), 1. http://alaskacoast.state.ak.us/District/Tables/NorthSlope/AEWC_Comments_NSBCMP_FINAL.pdf. Retrieved on October 3, 2008.

[257] Alaska DNR. "Comments of the Alaska Eskimo Whaling Commission," 3.

[258]Alaska Department of Natural Resources, Division of Coastal and Ocean Management. "Coastal Project Review," Internet; available from: http://www.alaskacoast.state.ak.us/Projects/pfirst1.html. Retrieved on August 7, 2008.

policies. Proposed final findings by the Division of Coastal and Ocean Management may be challenged by any state or borough agency under Alaska statutes, in which case the review of the ACMP findings falls on the Commissioner, who must issue a final finding within 45 days.[259]

The ACMP process underwent significant reforms in 2003. Responding to charges on behalf of industry stakeholders, that duplicate standards and regulations had resulted in time consuming delays in permitting, and confusing boundaries between statewide and district enforceable policies, House Bill 191 mandated significant changes to the ACMP consistency review process. The changes brought about by House Bill 191 (fully implemented in 2004) have been controversial. Many coastal districts have complained of what they see is an industry-tailored, watered-down ACMP program, which in the end diminishes the role of local knowledge in resource development. Some of the issues of contention are as follows: 1) coastal districts now suffer from the narrowing of the scope of district enforceable policies, 2) Regional Citizens' Advisory Councils have been removed from the list of *mandatory* ACMP review process participants, although they may still participate as *interested parties* 3) removal of language authorizing coastal districts to designate subsistence areas where subsistence activities have priority over all nonsubsistence uses, and 4) the DEC "carve-out", which is the elimination of DEC permits from the ACMP process.[260]

Initial review of, and the feedback on the proposed reforms to the ACMP prompted the federal oversight agency, the Office of Ocean and Coastal Resource Management to initially reject the state's reformed ACMP. One reason for the preliminary denial was the reduced scope and subject of coastal district enforceable policies set forth in the new regulations. In February 2005, Governor Murkowski pressured the Office of Ocean and Coastal Resource Management to accept the reforms by threatening to end Alaska's participation in the program, citing issues of state

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[259] *Petroleum News*. "NSB Issues Challenge," Vol. 12, No. 26. Internet; Available from: http://www.petroleumnews.com/pntruncate/711261476.shtml Retrieved on October 20, 2008.

[260] Alaska Department of Natural Resources. *Response to Public Comments February 20, 2004, Public Notice Draft of Proposed ACMP Regulations,* On file with the author.

sovereignty.[261] In the end, the amended ACMP regulations won federal certification in December of 2005. Coastal districts were asked to create new Coastal Management Plans (CMPs) according to the reformed ACMP, while their old CMPs sunsetted. The old CMP sunsetted in 2007, and the revised CMP plan under the reformed ACMP has not been approved by the DNR, and AEWC's role in the review process is uncertain. Without an approved CMP, the NSB uses the state's own program. There is a growing divide between coastal communities and the economic imperatives of state departments with regards to resource uses, as summed up by Caroline Cannon from the tribal council of Point Hope: "It's just like a recording, we're repeating ourselves. It just seems like these giants are just getting bigger without the consideration of our people, our way of life."[262]

4.3.3 The subpolitics of knowledge: Reactions, legislative actions, departmental reviews

North Slope Borough representatives feel that rural residents' input has been severely diminished under the new ACMP regulations, and overall meaningful participation in project reviews is impossible under a system that allows the state too much interference with local management.[263] Much decisive power concentrates at a single, top-level agency, the DNR, and its experts. For example, under the old ACMP 'elevations' (appeals regarding consistency determinations), were reviewed by three resource agency directors within 15 days of request. As amended, elevations are reviewed and decided upon by the DNR commissioner, with an extended timeframe for issuance of that decision.[264] DNR representatives say they understand that some districts have felt disenfranchised under the new ACMP because some local power has been moved to the state, but maintain that individuals still have the opportunity to participate

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[261] Alaska Legislature.com. "Threat to pull out of coast plan," Internet; Available from: http://alaskalegislature.com/stories/022805/coastal.shtml.
[262] Beth Ipsen, "Residents Voice Opposition to Shell's Offshore Drilling," *Pacific Environments* 19 April, 2007. Internet; Available from http://www.pacificenvironment.org/article.php?id=2340 ; Retrieved on February 28, 2010.
[263] Gordon Brower (NSB). Personal Communication. October 21, 2008.
[264] Ocean and Coastal Resource Management. *Final Environmental Impact Statement.* Internet; Available from coastalmanagement.noaa.gov/assessments/docs/akfeis.doc ; Retrieved on February 27, 2010.

in the review process through their coastal districts (working with their district coordinators), as well as directly through the public comment period at DNR's Division of Coastal and Ocean Management.[265]

The proposed new NSB CMP is heavily scrutinized by the state, while the Borough maintains its views on the extent of local input needed in the ACMP review process. With emphasis on preserving subsistence resources, habitat, and managing natural resource development to safeguard against adverse outcomes, the 2005 draft version of the revised NSB CMP included the objective of using traditional and local knowledge about geophysical hazards.[266] The NSB CMP is still in mediation, and its fate remains to be seen. Some coastal districts are still in negotiations with the DNR over their CMPs, while others have opted out of the program altogether. Complaints with regards to the public process involved under the ACMP reforms, as well as what is perceived by coastal districts as power grab by the state when it comes to district enforceable policies prompted the DNR to began a reevaluation of the new ACMP program.

The State of Alaska and coastal districts continue their fight over the reformed ACMP. House Bill 74 titled "An Act relating to the Alaska coastal management program; and establishing the Alaska Coastal Policy Board", introduced in January 2009 proposes a number of amendments to the new ACMP, such as a repeal of the DEC carve-out, reaffirmation of district enforceable policies, creation of a Coastal Policy Board to represent and reflect the diversity of regional and state agency interests, and inclusion of subsistence as one of ACMP's objectives.[267] However, as of February 2010, both the House and Senate versions of the coastal management bills are locked up in the

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[265] David Gann (DNR). Personal Communication. October 21, 2008.
[266] North Slope Borough. "North Slope Borough Coastal Management Plan Public Review Draft," Internet; available from http://www.north-slope.org/NSB/acmp/CMP%20Plan/NSB%20Chapter%202%20IGOs%20PHD.pdf Retrieved on October 2, 2008.
[267] State of Alaska. *The Alaska State Legislature,* Internet; Available from http://www.legis.state.ak.us/basis/get_bill.asp?bill=HB%20%2074&session=26 , retrieved on November 25, 2009.

Resources Committees of both bodies.[268] It is usually easier to protect policy already in place than to bring about change, therefore opponents of the new ACMP program are fighting an uphill battle. Not surprisingly, coastal districts support the bill, while the DNR and industry representatives oppose the amendments.

The controversy surrounding the ACMP reforms at first glance seems to have taken place within the traditional bounds of politics. The NSB and other coastal districts are pushing for a legislative change with regards to the diminished powers of coastal district CMPs, and are actively advocating for increased local powers. Since the ACMP is a top-down initiative that includes federal and state agencies, the course of action for repeal is through traditional nation-state politics, though legislative reform. However, there are signs that North Slope-based subpolitical groups are influenced by, and are reacting as a result of, the new ACMP regulations. There is likely a connection between the diminished authorities of NSB and its citizens in the consistency review process, and the increase in litigious opposition to oil projects by the Alaska Eskimo Whaling Commission (AEWC), and the Inupiat Community of the Arctic Slope.

The AEWC together with a number of environmental groups, filed suit against the Mineral Management Service (MMS), the federal agency in charge of environmental impact assessment, to halt a Shell offshore project on grounds that the environmental risks were not well assessed. The 2007 suit charges, among other things, that the MMS failed to take into consideration assessment criteria such as uncertainty and scientific controversy, and significant unknown risks to subsistence activities.[269] Two years later, the AEWC together with the Inupiat Community of the Arctic Slope filed a second lawsuit to stop the Shell project, again on grounds of insufficient risk assessment.[270] The

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[268] *Arctic Sounder.* "Energy Bills a Bright Spot for Rural Legislators," 25 February 2010, [newspaper on-line]; Internet; Available from http://www.thearcticsounder.com/article/1008energy_bills_a_bright_spot_for_rural_legislators; Retrieved on February 27, 2010.

[269] Crag Law Center. *Opening Brief at the U.S. Court of Appeals for the Ninth Circuit.* Internet; Available from http://crag.org/wp-content/uploads/2008/11/final-opening-brief.pdf ; Retrieved on February 28, 2010, 4.

[270] See Dan Joling, "Alaska whalers, environmental groups sue to block proposed 2010 Beaufort Sea drilling,"*Business News,* 15 December 2009, [newspaper on-line]; Internet; Available from http://blog.taragana.com/business/2009/12/15/alaska-whalers-environmental-groups-sue-to-block-proposed-2010-beaufort-sea-drilling-11729/ ; Retrieved on February 27, 2010.

lawsuit proceeded despite an initial agreement from Shell to shutdown operations near two Inupiat villages during fall subsistence whaling season, and to install *best available discharge technologies.*[271] No doubt Beck would note the irony, and symbolic detoxification of such description, because what is being discharged is hidden behind the promise of technology, as a supreme solution. What may be the finest available technology to some, to others, it may still be an agent of great hazards.

> What are the sources of conflict behavior? The fundamental source is that the goals and/or objectives of people differ and that action intended to achieve one agent's goals or objectives often results in costs (including monetary and non-monetary ones) for other agents in the social network. In the context of knowledge integration, exchanges among agents can result in increasing resources and opportunities for some and in decreasing resources, constraints, and risks for others.[272]

The feeling of uncertainty about the impacts of resource development in itself is a real risk to the consumers of risks. As Point Hope resident Alfred Downey said: "We found that the information was insufficient and we still don't have enough information about what is being proposed and what Shell would do if there are impacts."[273] The restrictions placed on local input into the reformed ACMP obstruct the flow of information between locals and officials, and they may increase the perceived uncertainty factor of risk decisions, and subsequent resistance to proposals.

Lack of effective communication between experts and citizens deepens the technocratic divide, and contributes to the agitation of subpolitical groups. This impasse is often the result of the industrial versus risk society tension: Beck suggests that the definitions of growing wealth change in RS, and "the distributional logic no longer

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[271] Shell Offshore, Inc. *Shells' Beaufort Sea Exploratory Drilling Program Oil Spill Response.* Internet; Available from http://www-static.shell.com/static/usa/downloads/shell_for_businesses/exploration_production/alaska/oil_spill_response_brochure.pdf, Retrieved on February 27, 2010.

[272] Exerpt from Joseph M. Firestone, (author of: Joseph M. Firestone and Mark W. McElroy. *Key Issues in the New Knowledge Management.* KMCI Press/Butterworth-Heinemann, 2003), "Knowledge Management and Conflict," Internet; Available from http://kmci.org/alllifeisproblemsolving/archives/knowledge-management-and-conflict-part-two-integrating-knowledge/ ; Retrieved on February 27, 2010.

[273] Ipsen (2007).

revolves around how the 'cake' might be divided up, instead it becomes clear that the cake has become poisoned."[274] The production of risks and unintended side effects are no longer accepted in RS as inherent. Rather, political conflicts emerge around liability, and institutional management.[275] The political opposition to the ACMP reforms, and the legal blocks thrown at offshore projects prove that many NSB stakeholders do not believe they are afforded meaningful input into risk decisions regarding oil development. Risk society has reached even the most remote whaling villages in Alaska.

4.4 Case Study: The politics of knowledge inside the North Slope Science Initiative

This case study of the North Slope Science Initiative (NSSI) explains the initiative's use of science to communicate risks and collaborate with stakeholders. The beginning of the NSSI dates back to 2004, when federal, state and local governments collectively conceived of an agency to monitor the effects of a rapidly changing climate in the North Slope, in order to "support climate-based and development decisions."[276] The 109th Congress formally authorized the multi-agency, long-term NSSI through the Energy Policy Act of 2005 (H.R.6, Section 348). The NSSI was envisioned as a replacement for the Research and Monitoring Team (RMT), a chartered organization in effect between 2000-2002 as an integral part of the Integrated Activity Plan and Environmental Impact Statement for the Northeast Petroleum Reserve –Alaska.[277] The RMT was designed to investigate the effectiveness of oil and gas development-related mitigation in the area. After the RMT sunsetted in 2002 development continued to expand beyond the Petroleum Reserve, -as did consensus among North Slope managers about the need for a new monitoring organization with a broader mission.[278] The NSSI is intended to meet that need, by providing managers with the scientific resources they will need to evaluate the simultaneous goals of resource development and environmental

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[274] Mythen (2004), 25.
[275] Ibid.
[276] North Slope Science Initiative. "2009 Report to Congress" Internet; Available from http://www.northslope.org. , retrieved on November 25, 2009., 3.
[277] North Slope Science Initiative. "History and Current Status," Internet; Available from http://www.northslope.org/ , retrieved on November 25, 2009.
[278] Ibid.

conservation. In essence, the NSSI was tasked with studying the effects of oil and gas activities on local ecosystems, and subsistence.

This study follows the same methodology used in the previous case studies, and is divided into three sections: risk analysis, assessment of institutional responsiveness, and a breakdown of the subpolitical sphere.

4.4.1 The changing pillars of risk: Resource development, environmental impacts, and the North Slope Science Initiative

The NSSI intends to produce high caliber science and provide scientific data to policy makers on North Slope ecosystems, while meeting the informational needs of regulatory agencies, local governments and the public.[279] *Figure 6* titled "North Slope Science Initiative Knowledge Production Process" maps the knowledge production process of the NSSI, created based on the language of the Energy Policy Act. As the map shows, the NSSI, much like any scientific endeavor, relies on as much subjective decisions and knowledge as it does on objective data. During the data input process, 'information needs' data (a highly subjective realm) enter the system, then these are 'evaluated' and 'prioritized' (another opportunity for biased decisions). Following this process, the previously raw data are transformed into 'data of highest technical quality' that are ready to be disseminated to experts and the public. In order to avoid a scientific process that is completely biased in a technocratic direction, it is crucial to facilitate effective, meaningful citizen participation. This is especially so in light of the fact that the NSSI is intended to mediate the environmental risks posed by oil development. Meaningful citizen input regarding competing resource uses should be one of the key components of the NSSI. This case study builds on this premise, and begins with an evaluation of the risks NSSI intends to lessen, from the viewpoint of RS theory.

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[279] Govtrack.us "H.R. 6: Energy Policy Act 2005," Internet; Available from http://www.govtrack.us/congress/bill.xpd?bill=h109-6 , retrieved on November 27, 2009, 115.

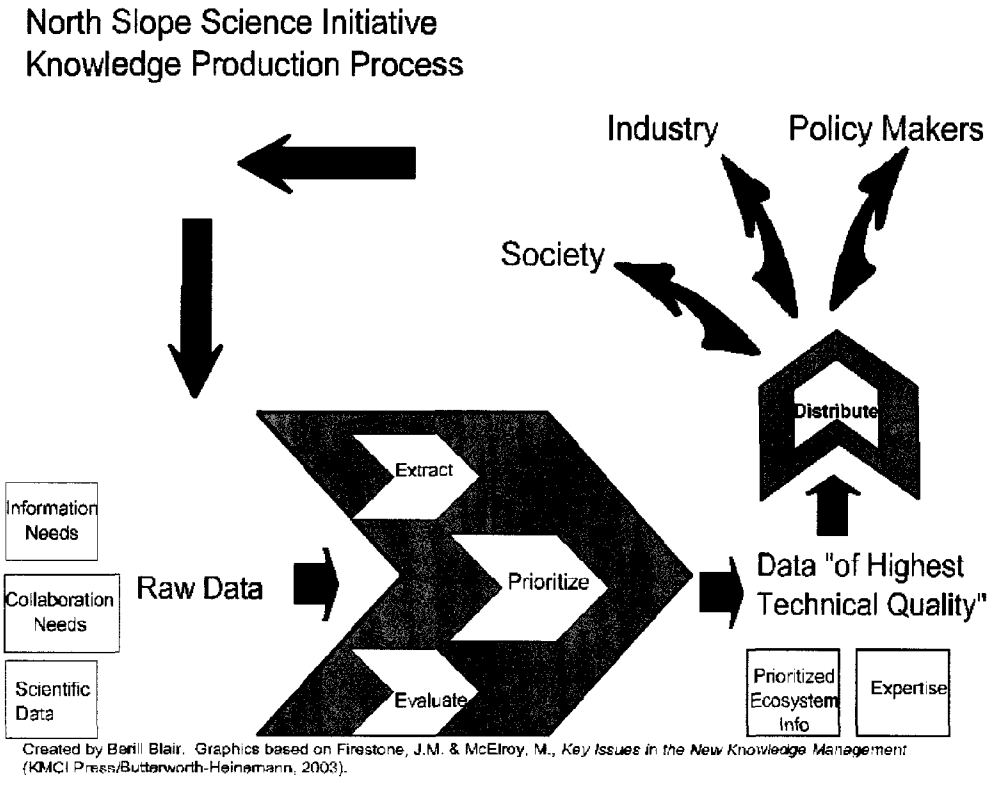

Figure 6: North Slope Science Initiative Knowledge Production Process

As previously discussed, North Slope stakeholders participate in a cash economy, but subsistence is still a vital part of their lives, both for economic and cultural survival (see *Chapter 4.3).* Negative externalities of oil development can have harmful effects on subsistence. The most infamous disaster, the 1989 Exxon Valdez oil spill in Prince William Sound released eleven million gallons of crude oil into the waters of the Sound. The short-term effects on the local ecosystem were enormous, but the area has also suffered long term, chronic effects as a result.[280] The subsistence lifestyle of fifteen

[280] National Oceanic and Atmospheric Administration. *The Exxon Valdez Oil Spill: How Much Oil Remains?* Internet; Available from: http://www.afsc.noaa.gov/Quarterly/jas2001/feature_jas01.htm ; Retrieved on February 28, 2010.

predominantly Alaska Native communities was disrupted for many months, perhaps for years to come, and the physical and psychological effects of this disaster resonated throughout a larger, global community. Such mega disasters aside, oil spills are not rare in oilfield operations, and the question maybe not if, but how frequently spills might occur. The November 2009 spill on the North Slope was one of its largest reported spills, estimated at forty-six thousand gallons of spilled crude oil.[281] Oil spills are not the only risk concern for Alaska Natives however. There may be unforeseen negative consequences of oil development; and some of these consequences may only be discovered by IK. For example, it was observed shortly after construction of the Trans-Alaska Pipeline, that caribou used the pipeline corridor to migrate instead of Anaktuvuk Pass, leaving villagers there without caribou.[282]

Residents near oil project sites may have different risk priorities from risk regulators, industry representatives, and the general public. According to Beck, when risk analysis and regulation is left up to scientific and technical experts, the scientific processes can sanitize the language of risk, and legitimize potential harm. Through defining 'acceptable levels' of pollution, or as Beck calls it, *permanent ration of collective standardized poisoning*, risk is co-produced across political, institutional and industrial boundaries.[283] The mandate of the NSSI is to coordinate and coproduce scientific data across scientific and cultural boundaries, and effective inclusion is an essential part of this premise. The next section is an analysis of stakeholders and their hierarchy within the NSSI.

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[281] Lisa Demer, "Spill is One of the Worst on the North Slope," *Anchorage (Alaska) Daily News.* 9 December, 2009. [newspaper on-line]; Internet; Available from http://www.adn.com/2009/12/08/1046914/spill-is-one-of-worst-on-the-north.html ; Retrieved on February 28, 2010.

[282] Eben Hopson Memorial Archives (1976).

[283] Beck (1992), 63.

4.4.2 Citizens, experts and inclusion: The North Slope Science Initiative and its stakeholders

This case study highlights socio-political issues specific to Alaska under RS theory. Alaskan politics is especially vibrant, due in part to the fact that Alaska has over two hundred active tribal governments. There are at least three different types of federally recognized Native governments: 1) traditional governing councils, 2) IRA [Indian Reorganization Act] councils, and 3) the Tlingit and Haida Central Council.[284] The complicated web of legalities surrounding federal and state recognition of tribal governance, and the differences between the three types of government are beyond the scope of this paper. For the purposes of this case study we'll consider tribal governments from a legal standpoint to be agents of litigation, and administrative recognition (mostly for administration of federal Native programs and services), while from a cultural standpoint, they are institutions closest in proximity to the Alaska Native individual (potential traditional knowledge holder). Individual participation in local council decision-making processes in Alaska's vibrant, extensive tribal governance is encouraged and managed locally.

NSSI member organizations include federal, state and private agencies. Federal members include the Bureau of Land Management, U.S. Fish and Wildlife Service, National Park Service, National Marine Fisheries Service, Minerals Management Service, and U.S. Geological Service. State agencies include the Alaska Department of Natural Resources, and the Alaska Department of Fish and Game. According to the NSSI charter, the ASRC (Arctic Slope Regional Corporation), -an Alaska Native (ANCSA) corporation is a member of the NSSI, because the ASRC "represents more than nine thousand Inupiat Eskimos of Alaska's North Slope. The shareholders of ASRC own surface and subsurface title to more than four million acres of North Slope lands. By virtue of this title, the ASRC represents the largest private landowner on the North Slope."[285] The North Slope Borough (NSB) is included among the NSII members based

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[284] Case and Voluck, 320.

[285] North Slope Science Initiative. "Charter," Internet; Available from: http://www.northslope.org , retrieved on November 25, 2009.

on its function to mandate management of active land uses across federal, state, Native and municipal lands, and to represent local interests:

> All of the Borough's planning and research activities are conducted in part to guarantee strong local input into subsistence resource management, with a special emphasis on the blending of contemporary and traditional local knowledge as a mechanism to sustain the resources and the local indigenous culture.[286]

Together, these federal, state and private organizations direct NSSI activities through the NSSI Oversight Group. The Oversight Group consists of one high-ranking representative from each agency with voting privileges, and meets twice a year. These meetings are open to the public and offer opportunities for public comment. In addition, the NSSI prepares an annual progress report for the Secretary of the Interior as mandated by the Energy Policy Act of 2005.

There are a number of stakeholders significant to this case study. This section provides a quick view of the complex legal and political web of interests. *Figure 7* titled "Oil and Gas Development Regulations and Participant Hierarchy in Alaska" is a summary of the hierarchy of stakeholders and regulations influencing Alaska's politics of oil. Alaska's tribes enjoy special government-to-government political status with the federal government, but exist without a specific land base since ANCSA lands are not considered "Indian Country" by legal definition.

Tribal governments often collaborate under umbrella organizations. The Alaska Federation of Natives (AFN) is the largest, most prominent statewide Alaska Native organization with its 178 member villages (federally recognized tribes, and village corporations), 13 Native regional corporations, and 12 regional nonprofits and tribal consortiums. The 37-member board that governs the AFN is elected annually. The mission of AFN is to enhance and promote the cultural, economic and political voice of the entire Alaska Native community.[287] Created in 1966, the AFN was instrumental in

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[286] North Slope Science Initiative. "Charter," Internet;. Available from: http://www.northslope.org.
[287] Alaska Federation of Natives. "About Us," Internet; Available from: http://www.nativefederation.org/about/index.php.; Retrieved on October 7, 2008.

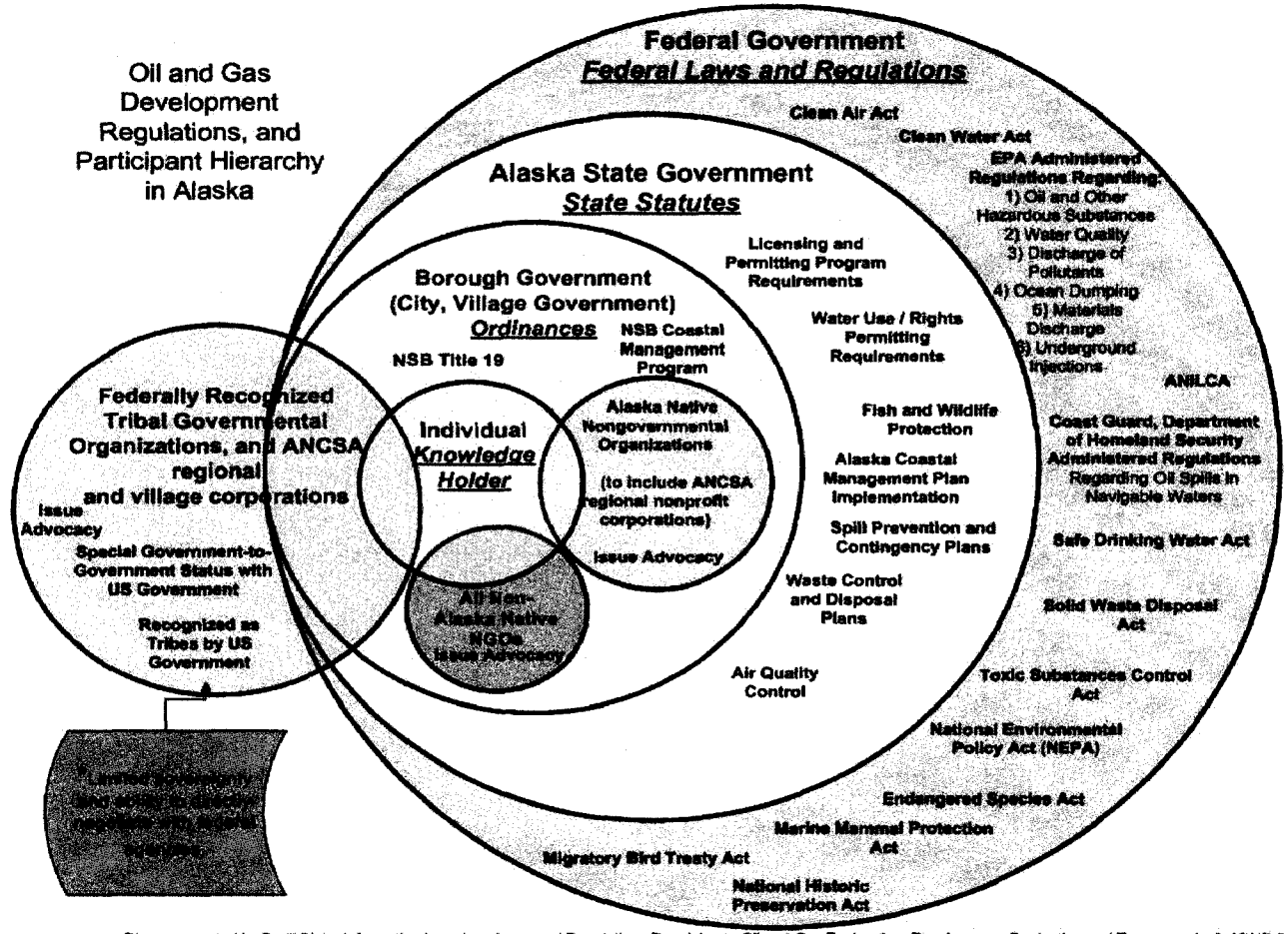

Diagram created by Berill Blair. Information based on "Laws and Regulations Pertaining to Oil and Gas Exploration, Development, Production and Transportation". ADNR DOG. http://www.dog.dnr.state.ak.us/oil/products/publications/northslope/nsaw2008/NS%20X%20B%20LawsRegs.pdf, and Case,D. and Voluck, D. Alaska Natives and American Laws. (Fairbanks, AK:UA Press). 2002. Last updated October 15, 2008.

Figure 7: Oil and Gas Development Regulations and Participant Hierarchy in Alaska

the passage of the Alaska Native Claims Settlement Act (ANCSA), and other federal legislations, such as Alaska National Interest Lands Conservation Act (ANILCA). The AFN continues to promote laws and policies in resource management, health, education, labor and government.

Of particular interest to this case study are the Alaska Inter-Tribal Council (AITC), the Inupiat Community of the Arctic Slope (ICAS), and the Arctic Slope Regional Corporation (ASRC), which is an ANCSA Regional for-profit corporation. The Alaska Inter-Tribal Council AITC is a statewide, tribally governed non-profit organization promoting "indigenous self-determination by providing technical assistance to tribal governments, facilitating inter-governmental and inter-agency communication and collaboration, offering public education regarding Alaska Native cultures and tribal governments, and advocating on behalf of tribal initiatives and self governance."[288] According to the AITC Constitution (first adopted in 1992), the Council consists of two elected Alaska Native members from each of the twelve geographic areas of Alaska. As part of its mission statement, the AITC works to embrace the traditional values, knowledge, and wisdom of Alaska Native cultures in promoting their way of life.[289] The many issues advocated by AIC illustrates a broad focus on tribal affairs.

The Inupiat Community of the Arctic Slope (ICAS) was formed in 1971 as a federally recognized regional native government under the amended federal Indian Reorganization Act (IRA) of 1936, the ICAS provides assistance to eight North Slope villages in resource management programs among other things. As an IRA tribal entity, the ICAS is an organized tribe (representing several North Slope tribes), and enjoys a government-to-government relationship with the federal government. The ICAS is frequently the active agent of legal action in cases of environmental hazard and

[288]Alaska Inter-Tribal Council. "About AITC," Internet; Available from http://aitc.org/node/5 , retrieved on November 25, 2009.
[289]Alaska Inter-Tribal Council. "AITC Vision Statement," Internet; Available from http://aitc.org/?q=node/31 , retrieved on November 25, 2009.

contamination suits, and aboriginal title issues among others. Recently, the ICAS filed suit in federal court in opposition to Lease Sale 193 in the Chukchi Sea.[290]

The Arctic Slope Regional Corporation (ASRC) has approximately nine thousand shareholders, title to five million acres of land, and is a regional ANCSA *for-profit* corporation. Regional for-profits own significant amounts of land in Alaska, including subsurface rights. These regional corporations are charged with meeting their shareholders' economic needs. Natural resource development is a very important aspect of these profit-making enterprises. In natural resource development decisions, regional corporations have a stated mission of protecting traditional uses of land, and developing resources with the least impact on the environment.[291] Regional corporations have a precarious role in tribal affairs. Though not recognized as tribes within Alaska Native communities, the legal and political definition of ANCSA regional for-profits make them federally recognized tribal entities. The Self-Determination Act recognizes ANCSA regional, and village for-profit corporations as "tribes", and recognizes them as "governing bodies" for certain purposes, so long as "maximum participation" of Alaska Natives is permitted in their affairs.[292] While it is not clear what the measure of maximum participation may be, inclusion of public input is mentioned in broad terms in corporate mission statements.

A good point of reference as for the intent of the Initiative on the issue of traditional and local knowledge is the draft version of the NSSI's Science Strategy (May 2005). According to the draft, the NSSI aims to "maintain and improve public and agency access to accumulated and ongoing research and to contemporary traditional and local knowledge."[293] As for data interpretation regarding collected traditional knowledge, the Draft stated: "Traditional knowledge has been used by other agencies on the North

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[290] Lee Poston. "Native and Conservation Groups Voice Opposition to Lease Sale 193 in the Chukchi Sea". *Common Dreams.org News Center.* http://www.commondreams.org/news2008/0206-10.htm. Retrieved on October 3, 2008.

[291] For example see "Doyon Lands, Natural Resources". Doyon Ltd. http://www.doyonlands.com/resources.html. Retrieved on October 5, 2008.

[292] Case and Voluck, 336.

[293] North Slope Science Initiative. *Science Strategy.* Internet; Available from: http://www.northslope.org/; retrieved on February 18, 2010, V.

Slope, in other parts of Alaska, and elsewhere and these past efforts should be studied to determine their applicability to the NSSI and to provide initial guidance for its use."[294]

The Initiative's draft discusses the differences between traditional knowledge (TK) and local knowledge (LK) in the Alaskan context. The drafts notes that in the case of TK, there is a majority consensus, it is integrated culturally, and is taught to future generation "as the way it is."[295] Additionally, local knowledge and user knowledge differ in that user knowledge is the experience of an individual, while local knowledge is correlated, and shared by others. The NSSI strategy posits that user knowledge, and local knowledge are frequently integrated into environmental documents in Alaska, on an issue-driven basis through community meetings, public hearings, and workshops. As for TK, NSSI plans to mandate the use of methods for TK representation, in a way that is useful to all interested parties.

The NSSI was plagued by poor funding during its developing stages, and its actual effectiveness in incorporating traditional knowledge into research decisions was questionable.[296] This was, in part, due to an initial identity crisis of the initiative; whether it would serve as a clearinghouse of information, or as an organization that funds its own projects.[297] Per the 2009 NSSI Annual Report to Congress, the NSSI has developed a website, designed a data management and information system (designed to pull ecosystem-related information from multiple entities on multiple layers into visual information), and an Arctic Project Tracking System, and held workshops in collaboration with other initiatives and organizations.[298] Within the NSSI structure, the North Star Borough is intended as the primary point of contact for the uptake of TK and LK: " The Borough's primary responsibility is to address the concerns and interests of NSB residents through a coupling of western and traditional knowledge."[299] Several

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[294] "North Slope Science Initiative. *Science Strategy.* Available from: http://www.northslope.org/; Internet; retrieved on February 18, 2010, V.
[295] Ibid., 23.
[296] Brian Pierson (NSB / DWM). Personal Communication. October 22, 2008.
[297] Noah Ashley (NSB, NSII). Personal Communication. October 22, 2008.
[298] North Slope Science Initiative. "2009 Annual Report to Congress," Internet; Available from http://www.northslope.com , retrieved on November 25, 2009, p.19-24.
[299] North Slope Science Initiatve, "2009 Annual Report to Congress," 37.

recent and ongoing projects however, propose to include TK and LK through local residents, such as the *Snowshoe Hare Ecology and Contaminants Project,* and the *Bowhead Feeding Variability in the Western Alaska Beaufort Sea.*[300] This type of collaboration highlights the fact that one of the main advantages of the initiative is in bringing together industry representatives, state agencies, local municipalities, and local residents. The AITC however has brought up issues it considers serious shortcomings in the NSSI mandate.

4.4.3 The subpolitics of knowledge: The Alaska Inter-Tribal Council's objections to the North Slope Science Initiative

In its *Cover Letter to Tribal Preclusion White Paper* the AITC voiced strong objections to the participation of the Arctic Slope Regional Corporation (ASRC) in the North Slope Science Initiative (NSSI).[301] The allegations regarding the inclusion of the ASRC were a scathing indictment of expert institutions, and their policies of "political ethnic cleansing." In order to find out how a collaborative, knowledge-producing organization could receive such criticism, it is necessary to examine the science-policy background of NSSI.

The 2005 Energy Policy Act explicitly mentions TK and LK in NSSI's objectives, stating that NSSI is to "maintain and improve public and agency access to contemporary and traditional local knowledge."[302] The language seems to imply the potential for inclusion but is vague as to the extent of the use of such knowledge bases. The bill further states that the federal government is to enter into a cooperative agreement between State, and Borough agencies, and the ASRC to coordinate and share the efforts, resources and funding needed to accomplish the Initiative's goals.[303] This relationship between the ASRC, NSSI and the federal government is at the heart of the controversy.

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[300] North Slope Science Initiatve, "2009 Annual Report to Congress," 31-32.
[301] Alaska Inter-Tribal Council. *Cover Letter to Tribal Preclusion White Paper,* Internet; Available from http://aitc.org/?q=node/81, retrieved on November 25, 2009.
[302] Govtrack.us "H.R. 6: Energy Policy Act 2005," Internet; Available from http://www.govtrack.us/congress/bill.xpd?bill=h109-6 , retrieved on November 27, 2009, 115.
[303] Ibid.,116.

Regional ANCSA corporations' simultaneous drive for economic development, and their legal definition as tribal entities often create tensions in Alaska Native communities. In some instances, public participation may be hindered, or perceived hindered due to these conflicting roles of regional corporations.

The AITC contends that by way of consultation and funding of a corporation to study the effects of petroleum development on Alaska Native culture and subsistence (especially when that corporation is simultaneously engaged in such development), ANCSA corporations are stepping into the shoes of Tribes.[304] The AITC charges that a superior local agent of Alaska Native culture and knowledge, the Inupiat Community of the Arctic Slope (ICAS), a federally recognized regional native government should have been consulted instead. The questions raised by the AITC center around the legalities brought on by this arrangement, but it is easy to see the relations between the political and the scientific. Since the ASRC is a corporation, as such it must abide by state and federal regulations while carrying out its functions under "non-traditional enforcement, and state sanctioned regulatory schemes."[305] On the other hand, the AITC charges, consulting with and providing funds to the regional native government would enhance the sovereignty of North Slope Tribes by allowing them to enforce Traditional and Elder Councils, and Native customs and traditions.[306] Clearly, the political and scientific interface beneath unresolved socio-political issues such as tribal sovereignty, and the battleground inherently spills into the frontiers of science. As discussed earlier, politics and science are inherently linked in traditional Native American culture because the *way of knowing* and *is* the guiding set of principles by which people abide. When integrating IK into expert science processes, the added issues of authority, autonomy, and moral conflicts may arise if IK is removed from its context.[307] The NSSI validates inclusion of the ASRC in research based on its status as a private landowner, and as an authentic

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[304] Alaska Inter-Tribal Council. *Cover Letter to Tribal Preclusion White Paper,* Internet; Available from http://aitc.org/?q=node/81, retrieved on November 25, 2009, 3.
[305] Alaska Inter-Tribal Council. *Tribal Preclusion White Paper,* Internet; Available from http://aitc.org/?q=node/81, retrieved on November 25, 2009, 32.
[306] Ibid.
[307] Leach et al., 9.

advocate for its shareholders. As the AITC posits that this state-sanctioned regulatory scheme promotes a non-traditional enforcement of knowledge production, it becomes clear that within the multi-altitude, representative structure of the Initiative the power play for input evolves at the lower (local) levels.

4.5 Discussion

The two case studies discussed in this chapter depict the many stakeholders and interests competing within Alaska's oil administration regime. Expert institutions work to understand and manage ongoing changes to local ecosystems, and to facilitate resource development. During this process they build new relationships, antagonisms, and create new infrastructures designed to support these new relationships, under a "systemic way of dealing with hazards and insecurities induced and introduced by modernization itself."[308] The ACMP review process, and the NSSI are both good examples for this transforming power of risk in RS: when risk definitions enter expert systems of validation (risks require scientific recognition), conflicting rationalities between the producers of risk definition, and consumers of risk definition emerge. In the case of the NSB, the old CMP was an efficient link between residents' IK and decision makers. The NSB lost a significant amount of control in shaping risk definitions under the reformed ACMP. This loss of control contributes to what Beck calls *symbolic detoxification.* In this case, the power grab of risk management institutions implies an authoritative monopoly over risk claims, and may result in a systemic rationalization, rather than elimination, of hazards.

These two cases also highlight the implications of clashing rationalities: the NSSI expert system is designed to foster agency access to IK via local government, and to engage corporate interests on behalf of local shareholders in collecting scientific data. As discussed earlier, the social rationality of risk is much different from scientific rationality, and this divergence often causes conflict. When existing knowledge producing entities established by citizens for the purposes of scientific collaboration, or legal entities designed to represent shared knowledge (e.g. Alaska Native Science Commission, local

[308] Beck (1992), 21.

and regional tribal entities) are left out of collaborative efforts, the divide between experts and citizens is evident, and signs of technocratic environmentalism are present. When IK is lost in this process, the consequences of RS reach far into and beyond the political sphere, and issues of morality emerge. As the AITC charged with regards to the employment of ASRC, the NSSI "used the indigenous people themselves to eliminate indigenous sovereignty."[309] On a more positive note, Turner posits that a globalized, industrial society not only grows the environment of risk, but it also is an opportunity to grow social rights.[310] The growth of IK inclusion projects, and systemic support for subpolitical groups –as seen in the case of the ANSC, support Turner's observation and Beck's remark that in RS knowledge gains new importance.

In the next chapter, the research turns to formulating answers to these concerns in contexts important to Alaskan stakeholders. *Chapter 5* summarizes the findings of this research, and examines some of the available models for effective science uptake in expert decision-making, then concludes with a discussion of areas needing further investigation.

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[309]Alaska Inter-Tribal Council. *Cover Letter to Tribal Preclusion White Paper.* Internet; Available from http://aitc.org/?q=node/81, retrieved on November 25, 2009, 3.

[310] Brian S. Turner. Risk, Rights, and Regulation: An Overview. *Health, Risk, and Society* 3 (2001):9-18, 17.

Chapter 5
Conclusions

5.1 Findings

The purpose of this study was to investigate the use of science and the inclusion of North Slope Borough communities in risk-based policymaking inside Alaska's oil management regime. This research identified available avenues for indigenous knowledge (IK) input under the current management scheme, and compared the extent and meaning of IK inclusion in risk decisions against the environmental risks imposed upon locals by the negative externalities of oil development. The approach used to accomplish this task relied on Ulrich Beck's risk society (RS) thesis, in order to assess the role of risk in shaping the transactions between experts and citizens, and the general flow of information during knowledge production. Briefly stated, RS refers to a society increasingly preoccupied with, and organized in response to, risks that threaten its future safety. These risks are socially produced, and decision-contingent, and are generated by the processes of modernization, therefore they are *manufactured* risks. Because these risks are highly technical and pose unpredictable environmental hazards, the institutional apparatus responsible for risk regulation is paralyzed due to the widespread production of pollution, as well as the scientific uncertainties, which surround the outcome.

This thesis begins with the premise that RS conditions order current Alaskan resource politics, and as a result, expert institutions of risk calculus have reached a technocratic state. Of particular interest to this research have been the knowledge producing agencies in charge of mediating the risks as byproducts of oil development on the North Slope. This thesis proposed that knowledge production processes used by risk management regimes fail to include local residents' IK in proportion with the environmental risks they face. Because of this trend, official risk determinations regarding oil projects meet frequent opposition and legal challenges, and prompt the agitation of subpolitical groups. This adversarial relationship between experts and risk-affected communities hinders an already complex administrative process, incurs

economic costs to state and industry, and fails to provide the public with a feeling of protection and security about policy outcomes.

The findings of this research support this hypothesis, and can be delineated along three risk themes: First, the nature of risks from oil development match the criteria for manufactured risks under RS both for their magnitude and the inability of protecting institutions to control them. Second, the use of science in risk determinations is biased heavily in favor of scientific rationalities, resulting in the marginalization of cultural and social needs. Third, this technocratic hegemony of risk protection regimes pushes an active citizenry to challenge institutions from below with subpolitical definitions of knowledge.

As Persistent Organic Polutants (POPs) invade even remote areas far from their industrial applications and as climate change-induced coastal erosion threatens Alaska's shores, Beck's warning that ecological risks are no longer an environmental problem, but an institutional crisis of industrial society itself, seem to be relevant. Oil development is under constant scrutiny for its potential to add to an already impressive load of environmental risks, and the general public is forced into self-reflection about past choices and future consequences. Market incentives are pressing on the one hand, on the other however, a collective disenchantment is growing over the ecological side effects of unchecked economic progress.

A historical overview of oil policy in Alaska revealed that the central role of oil to Alaska's economy, an effective oil lobby, the large pool of alternate knowledge forms, and the manufactured risks resulting from the byproducts of oil production have contributed to a quick rise of RS in Alaska. The extent to which administrative agencies are prepared to demonopolize knowledge claims in RS depends on the value placed on scientific versus cultural (or social) rationalities in the public sphere. A scientific rationality, that we can delegate decision making to objective experts, who rely on value neutral scientific calculus to provide solutions to policy dilemmas, still prevails. Subpolitical movements are driven to counter this claim. Subpolitical knowledge pursuits do not discount the value of science entirely; rather they do not rely solely on

quantitative risk analysis and judgments, but also take into account subjective decisions on how we want to live, and what priorities might drive us beside material wealth. The cultural and social rationalities of subpolitical definitions of knowledge are not compatible with industrial society, and this trend is a sign of the RS.

New discourses for knowledge production have emerged in recent decades in policy initiatives, and expert institutions have opened up to knowledge from the 'outside,' adopting such egalitarian measures as public comment periods, and public hearings. While the bottom-layers of expert science have been democratized by the accumulation of a diverse data base, even including IK (see *Figure 6*), this incoming data flow bottlenecks at the top, where final decisions are still left to experts, who sift through information to evaluate and disseminate it (e.g. best interest findings by the Alaska Department of Natural Resources Commissioner). The end result is the kind of technocracy RS theory warns about, and contested policy decisions as evidenced by the legal challenges pursued by subpolitical groups in response.

As the Alaska Coastal Management Program (ACMP) case revealed, political support for inclusion of alternate knowledge forms depends on the general political climate and existing legislation, therefore it is highly dependent on interest politics. The pre-reform ACMP allowed extensive local input into project permitting decisions, through district-enforceable policies. Legislative changes to the program however have delegated much of that power to top-level experts, creating an identity crisis for the program, because the founding principle of the ACMP was built on empowering state *and* coastal districts with a powerful tool to monitor and influence development decisions. The North Slope Science Initiative (NSSI) has been productive in information sharing among state and federal agencies, but the role of IK has not been fully realized. Alaska Native subpolitical organizations, such as the Alaska Native Science Commission (ANSC), designed for creating a forum for diverse knowledge bases, have been left out of the organization. Inclusion of the local ANCSA regional corporation in the research that studies the impact of oil development on subsistence, while it profits from the oil revenue

from these projects, has been controversial especially because North Slope tribal governments have been overlooked by the initiative.

It seems the direction of knowledge mobilization is an indicator for the extent citizens will recognize the end products as genuine reflections of their risk rationalities. The Alaska Native Science Commission (ANSC) began close to citizens, and grew from the bottom-up so to speak, and has advocated for citizens based on locally identified needs. While the ANSC has collaborated successfully with Alaska Native communities and with academic entities such as the University of Alaska, and the National Science Foundation, it seems to have been much less relevant with state-level initiatives. On the other hand, the ACMP and the NSSI were both initiated at the federal level, and extended inclusion downward toward ordinary citizens. While these programs are well received among state and federal agencies, they have received mixed reviews at best at borough and tribal levels of government, especially since the 2003 reforms made to the ACMP. Knowledge producing mechanisms seem to have an allegiance, or credibility with stakeholders of similar rationalities and have a hard time crossing this divide.

So what does this all mean to Alaskans? Is there a way to move beyond the RS? Are there models for IK inclusion that would work more effectively than current practices? This research concludes with a few observations and recommendations for the present and future. The public debate surrounding oil frequently deadlocks over the tradeoffs between economic gains and ecological costs. In RS, institutions and social values are transformed by risk definitions and management, and Alaska's oil management regime is increasingly confronted with this trend. While there may not be a perfect model for the use of science in risk management, the lessons learned from the case studies presented in this thesis may contribute to a more efficient model. To supplement these findings, these recommendations will also include insights from Beck (1992), Fisher (2005), and Haley et al. (in press).

5.2 Moving forward: Recommendations

The pre-reform ACMP seemed to have built a good working relationship between coastal districts and state agencies. The authority delegated to local governments via the Coastal Management Plan (CMP) to designate subsistence areas and manage their uses, provided a fairly efficient route for the uptake of IK. The legislative changes that caused this divide between state departments and local districts resulted from heavy oil industry pressure. If industry were to allow the restoration of these former powers back to local districts through House Bill 74, it would potentially reduce the technocratically biased nature of risk regulation. For example, the creation of an Alaska Coastal Policy Board to diversify the interests behind permitting decisions may widen the bottleneck of information flow. In the case of the NSSI, it should perhaps encourage tribal governments to participate and improve IK inclusion. Tribal governments signify sovereignty and self-determination, and may be more effective in accommodating the transmittal of the cultural meanings that are so essential to IK. Alaska Native people engage in a diverse assortment of subsistence activities depending on their location and heritage, therefore consulting all the North Slope tribes could give a complete picture of the impact of oil development on subsistence.

So, how do we move beyond RS conditions? How do we make sure that risky resource development projects touting the latest and safest technology, will definitely not unleash 'uncontrolled and uncontrollable experiments' upon society?[311] Beck acknowledges that modern risks cannot be banned from life; and says instead that we should build more effective institutions for risk protection. Beck suggests the creation of responsive, democratic institutions that allow citizens to choose the risks they want to take through open governments and organizations, well-informed publics and socially aware firms.[312]

Fischer suggests that the Danish Consensus Conference (DCC) contains good lessons on participatory inquiry as an integral part of a public sector reform.[313] The DCC

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[311] Beck (1999), 108.
[312] Ibid.
[313] This section on the DCC follows Fischer, 234-237.'

approach is based on a citizen tribunal, a social debate on technological and environmental issues. The DCC is a useful model for not only the integration of cultural and social rationalities into seemingly exclusively scientific and technical matters, but for the strengthening of public discovery, or 'people's enlightenment'. First, the randomly selected, volunteer citizen panel participates in informal meetings with a steering committee who outlines the topic to citizens, and disseminates extensive reading materials. There is an extensive period of reading, developing further questions, getting answers, refining new questions, and more reading on the topic before the conference begins. The interdisciplinary panel of experts who will participate receives citizen questions in advance, and prepares further information for them, based on their preliminary questions. By the time the conference begins, participants are very well informed on the topic and related issues at hand. The DCC lasts three to four days and consists of expert presentations, followed by cross-examinations by the citizen panel. Members of the audience may also ask questions and make comments, and relevant interest groups may also be questioned. Following the DDC, the citizen panel prepares an extensive report on their findings including the broad spectrum of legal, ethical, moral, and social aspects of the topic. The report is publicly presented, and distributed to politicians, scientists, and interest groups.

The DCC results in an inquiry process that is more readily understood by the general public, and politicians, and reflect public opinion better than expert assessments.[314] The DCC has given citizens an increased, meaningful role in environmental policy making. The DCC model is a great model for lessening the technocratic monopoly over scientific policy decisions, because it integrates scientific and cultural rationalities, and brings together experts and citizens who are divorced in the Alaskan models. The logistics of implementing a DCC-like model in Alaska would pose specific challenges due to geographical and cultural challenges not experienced in its European implementations. However, some elements of the DCC could be adapted to the Alaskan context. For example, such motivated, intense, in-depth dialogue and exchange

[314] Fischer, 237.

of information between experts and citizens would increase the accountability of officials to concerned citizens in Alaska. To move beyond RS, citizen definitions of risk can no longer be deemed *irrational*, and be denied on the basis of being *perceived.* Cultural and social meanings of risks are as real as any 'identifiable' risk.

> Decision makers struggle with uncertainty, rather than risk, even when many risks (as in the case of the space shuttle) appear to be calculable. Decisions under conditions of both uncertainty and risk are, of course, subject to error. *What is at stake is the acceptability of the error* [emphasis added].[315]

The DCC's emphasis on the democratic process in science-based decisions, and the meaningful application of the findings of its citizen panel deserves a place in the Alaskan public process. Further research is needed to successfully extract those aspects of the DCC, which may be injected into a working Alaskan consensus conference model across the boundaries of existing cultural and geographical differences between Denmark and the U.S. It is impossible to offer explicit recommendations for institutional reforms within the pages of this thesis, however lessons from other models of risk management systems can provide clues for conflict avoidance.

The emerging challenges in Alaska's oil resource management require a fresh look at current risk management systems, and a renewed effort to include indigenous stakeholders in decision-making. The pre-reform ACMP and NSSI were envisioned to empower local communities in combating the risks from resource development, by giving affected stakeholders increased input in resource management decisions and avenues for co-production of scientific data. However, the failures of current natural and scientific resource governance regimes have resulted in political and legal conflicts. It may be difficult to reform risk and knowledge management models and to empower those living closest to risk sources working within the limits of a majority-ruled political process: How do we effectively include local stakeholders' cultural rationalities without marginalizing other stakeholder groups? Yet as the health of fragile Arctic ecosystems is

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[315] Beck (1999), 123. Quoting A.J. Reiss. 'The Institutionalization of Risk,' In *Organization, Uncertainty and Risk,* ed. J.F. Short and Ed Clarke. (Boulder: Westview Press, 1992), 29.

threatened by RS conditions, place-bound stakeholders have "the most direct and critical interests in the sustainable management of the resources, and the strongest, most direct historical claim to the Arctic offshore."[316] These place-based interests warrant the recognition of special status within a governance regime.[317] As illustrated by the Alaska Inter-Tribal Council's objections to the NSSI, to achieve meaningful inclusion of IK inside risk management schemes is significant beyond its practical application for filling the gaps in existing data, but is also an important social justice issue. Resource management decisions, which do not consider "the uniqueness of the ecosystem and the relative costs of development to different groups of stakeholders" are undemocratic from a participatory democracy standpoint for failing to be based on a full, equitable consideration of "everyone's account of what's at stake."[318] The United States has enacted specific environmental justice provisions aimed at enforcing environmental regulations equitably and requiring agencies to avoid inflicting disproportionate environmental harms on minorities and the poor (see Executive Order 12898).[319] Such special protection is designed to lessen the social and economic effects of institutional inequalities on disadvantaged populations.

Haley et al. address numerous grounds for "overrepresenting" the underrepresented in Arctic marine resource management. For example, democratic asymmetries exist due to what economists call "asymmetric information," resulting in unequal access among stakeholders to information they need to act in their own interest.[320] This trend can create asymmetries of power in institutions of governance, resulting in a disproportionate loss of knowledge claims among some groups of stakeholders, such as residents of remote regions of Arctic Alaska. Haley et al. further state that due to such hierarchical tendencies of scientific institutions, coupled with

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[316] Sharman Haley et al., Strengthening Institutions for Stakeholder Involvement and Ecosystem-based Management in the U.S. Arctic Offshore. In *North by 2020 synthesis*, ed. Hajo Eicken and Amy L. Lovecraft. Fairbanks: University of Alaska Press (in press), 2.
[317] Ibid., 10.
[318] Ibid.,
[319] Judith A. Layzer. *The Environmental Case: Translating Values into Policy.* Congressional Quarterly Press: Washington, D.C., 2006, 105.
[320] Haley et al., 8.

complexities stemming from constantly changing ecological, social and political relationships, as well as policy failures and uncertain regulatory outcomes, institutions should first "flatten hierarchies among different types of stakeholders by putting all sources and types of information on equal footing."[321] Haley et al. propose that institutional strengthening begins not by organizational restructuring, but by creating open and original processes for collecting stakeholders' storylines.

The technocratic governance of risk mediation under current knowledge management schemes fails to adequately and equitably incorporate IK into oil resource management and to include IK in the evaluation of relevant policies. Awareness of these shortcomings of current governing institutions and policies is an important first step toward formulating better, more responsive risk management regimes. The complex issues of risk and uncertainty in oil resource development must be approached using multiple facets of understanding and taking into consideration cultural as well as scientific value premises during decision-making. In a new management model the rights and needs of place-bound indigenous communities should merit the meaningful inclusion of IK in critical decisions concerning risks.

[321] Haley et al., 8.

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